Vol. 1023 Number 1

OFFICIAL GAZETTE

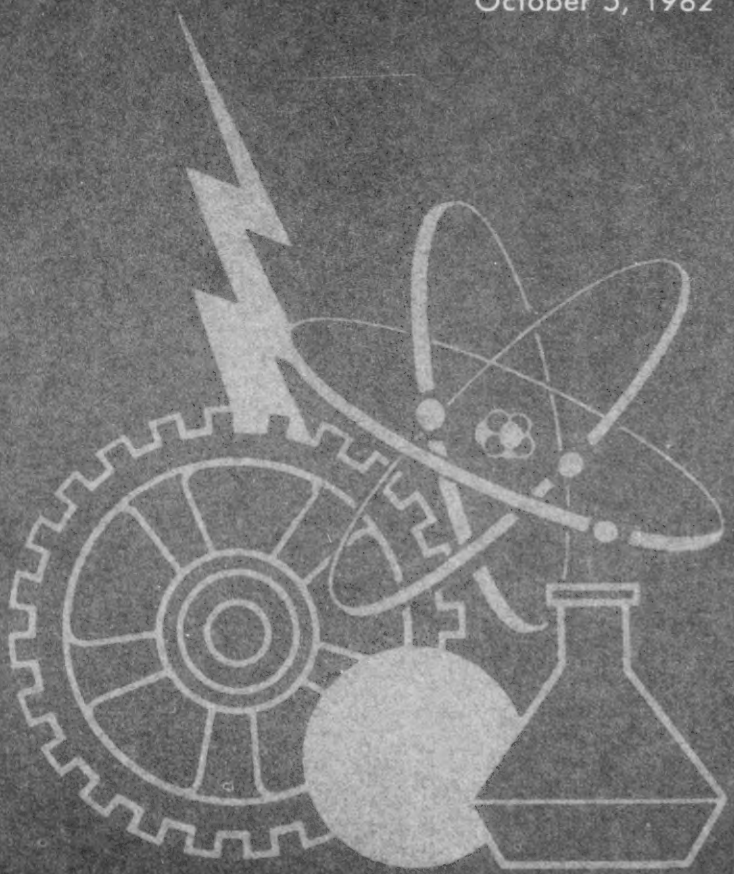
of the

UNITED STATES PATENT AND TRADEMARK OFFICE

Route to:

PATENTS

October 5, 1982



PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

U.S. DEPARTMENT OF COMMERCE

Patent and Trademark Office

OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

October 5, 1982 Volume 1023 Number 1

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.

GENERAL INFORMATION concerning PATENTS.

GENERAL INFORMATION concerning TRADEMARKS.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries and the most recent PCT rule changes, see the notices appearing in the Official Gazette at 1001 O.G. 14 on Dec. 9, 1980 and at 1012 O.G. 20 on Nov. 17, 1981. For use of the European Patent Office as a searching authority for PCT applications filed in the United States, see the notice in the Official Gazette of Sept. 28, 1982 at 1022 O.G. 52.

Note that the international fees have been increased as of Jan. 1, 1982 and that the domestic PCT fees have been increased as of Oct. 1, 1982. Domestic PCT fees were increased by a rule change which was published at 1021 O.G. 11 on Aug. 10, 1982. The current schedule of fees is as follows:

Transmittal fee	$ 125.00
Search fee	300.00
U.S. Patent and Trademark Office as Searching Authority	
• No corresponding prior U.S. national application filed	500.00
• Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
• All cases	710.00
International Fees	
Basic Fees (first 30 pages)	270.00
Basic Supplemental Fee (for each sheet over 30)	6.00
Designation fee (for each national or regional office)	65.00

DONALD J. QUIGG,
Sept. 10, 1982. *Deputy Commissioner of Patents & Trademarks.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,121,507, Re. S.N. 349,499, Filed Feb. 17, 1982, Cl. 99/275, APPARATUS FOR MIXING A CARBONATED BEVERAGE, Alexander Kuckens, Owner of Record: *Dagma Deutsche Automaten und Getrankemaschinen GmbH & Co., Reinfeld/Holst, Germany,* Attorney or Agent: Dale R. Small, et al., Ex. Gp.: 242

4,207,414, Re. S.N. 399,788, Filed July 19, 1982, Cl. 536/1, POLYSACCHARIDE ANTIGENS, Dennis L. Kasper, Owner of Record: *Inventor,* Attorney or Agent: R. W. Furlong, Ex. Gp.: 123

4,215,366, Re. S.N. 401,693, Filed July 26, 1982, Cl. 358/124, SUBSCRIBER-LIMITED RECEPTION TELEVISION BROADCAST SECURITY ENCODER-DECODER SYSTEM, Richard A. Davidson, Owner of Record: *Feature Film Services, Skokie, Ill.,* Attorney or Agent: Robert L. Lindgren, et al., Ex. Gp.: 222

4,236,061, Re. S.N. 399,764, Filed July 19, 1982, Cl. 219/265, QUICK-ACTING ELECTRIC CIGAR LIGHTER, Lawrence E. Fenn, et al., Owner of Record: *Inventors,* Attorney or Agent: H. Gibner Lehmann, et al., Ex. Gp.: 213

4,250,971, Re. S.N. 399,982, Filed July 19, 1982, Cl. 173/23, PARTICULATE MATERIAL INTERCEPTING ARRANGEMENT FOR A HAND-HELD TOOL, Wilbert Reibetanz, et al., Owner of Record: *Robert Bosch, GmbH, Stuttgart, Germany,* Attorney or Agent: Michael T. Stricker, Ex. Gp.: 323

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

4,093,140, Reexam. No. 90/000,250, Requested: Aug. 30, 1982, Cl. 242/56.2, METHOD OF RECOILING SLIT MATERIAL, Douglas S. Matsunaga, Owner of Record: *Braner Enterprises, Inc., Schiller Park, Ill.,* Attorney or Agent: Oltsch, Knoblock & Hall, Ex. Gp.: 245, Requester: Owner of Record

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COMMISSIONER ORDERED REEXAMINATIONS

Notice under 37 CFR 1.11(c). The orders for reexamination listed below are open to inspection by the general public in the indicated Examining Group. Copies of the Orders and other related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed. 37 CFR 1.248(a)(5) and 1.525(b).

3,464,799, Reexam. No. 90/000,251, Ordered Sept. 8, 1982, Cl. 422/91, GAS DETECTOR, Charles L. Kimbell, Owner of Record: *Inventor,* Attorney or Agent: Harold Levine & Alfred Hall, c/o Sigalos & Levine, Ex. Gp.: 177, Requester: Commissioner of Patents and Trademarks

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Department of the Treasury
United States Customs Service
(T.D. 82-151)

Notice of Recordation of Trade Name "BRITCHES GREAT OUTDOORS"

On May 19, 1982, a notice of application for the recordation under section 42 of the Act of July 5, 1946, as amended (15 U.S.C. 1124), of the trade name "BRITCHES GREAT OUTDOORS" was published in the Federal Register (47 FR 21672). The notice advised that prior to final action on the application, filed pursuant to section 133.12, Customs Regulations (19 CFR 133.12), consideration would be given to relevant data, views, or arguments submitted in opposition to the recordation and received not later than 60 days from the date of publication of the notice. No responses were received in opposition to the application.

The name "BRITCHES GREAT OUTDOORS" is hereby recorded as the trade name of Canterbury Tales, Inc., a corporation organized under the laws of the District of Columbia, located at 1321 Leslie Dr., Alexandria, Va. 22301. The trade name is used in connection

with the following merchandise which is manufactured in Hong Kong and Taiwan: Men's and women's clothing; shoes, slippers, down booties and shoe trees; umbrellas; key rings; brass accessories; gift items; wallets; leather goods; attaches; luggage; clocks, watches and watch bands; sunglasses; razors; smoker's accessories; knives; games; books; food products; pens and ink; fabric; camping equipment; and retail clothing store services.

DONALD W. LEWIS,
Aug. 20, 1982. *Director, Entry Procedures and Penalties Division.*

Revised Regulations and Procedures for Visitors to the Patent and Trademark Office

Effective Oct. 1, 1982, all visitors to the Patent and Trademark Office (PTO) will be required to obtain and display a visitor pass while using PTO facilities. Passes will be available in building CP3, Room 1A01.

The current User Agreement will be replaced by the following Regulations for Visitors to the PTO:

These regulations are established for members of the public using the facilities of the PTO and will be enforced by designated officials of the PTO.

All persons using the facilities of the PTO are subject to regulations governing conduct on property under the charge and control of the General Services Administration which appear in 41 CFR Subpart 101–20.3 (41 CFR §§101–20.300 through 101–20.314).

Packages, briefcases and other personal effects brought into the PTO are subject to search by authorized personnel for reasonable cause.

All persons must comply with posted Official Notices.

User Passes

1. Individuals visiting any area of the PTO must obtain and display a valid, non-transferable User Pass at all times while on the premises.
2. Permanent User Passes may be obtained from the Manager of the Patent Public Search Room. The first User Pass is issued at no charge. Duplicate or replacement User Passes will be provided at a cost of $5.00 per Pass. Temporary User Passes may be obtained at no cost and are valid through the expiration date stamped thereon.
3. Permanent and Temporary User Passes must be surrendered to authorized PTO officials upon request for cause.

Use of Search Areas

4. When searching in a patent examining organization, visitors must register with the designated representative and sign a log indicating time entering and leaving the area, User Pass number, and class(es) and subclass(es) searched.
5. Documents removed from the files must be promptly returned to their proper location after use. No documents may be removed from the area in which they were obtained without specific authorization from a Group Director or a Supervisory Patent Examiner.
6. Use of Patent Examining Group search areas is strictly limited to searching materials unavailable in the Patent Public Search Room or the Scientific Library. Examining Group search areas may be used only when such use does not conflict with the regular business of the organization.
7. Trademark registrations may not be removed from the secured bundles in the registered file. Photocopying from bound volumes of trademarks is prohibited.

Prohibitions

8. Smoking and consumption of food or beverages in other than designated areas.
9. Loud talking or any conduct which is disruptive to others.
10. Use of radios, typewriters, photographic equipment, dictation equipment, and like items without permission from a designated official of the PTO.
11. Improper use, mutilation, destruction or removal of patent or trademark records or government property.
12. Reserving seats or work areas.
13. Affixing messages to walls, telephone booths or other government property, except designated message boards.
14. Use of the PTO as a mailing address, and use of PTO stationery.

Hours of Operations

15. Use of PTO facilities is limited to the following hours on regular business days:

Patent Public Search Room, High Ceiling Area	8:00 am–6:00 pm
Low Ceiling Area and Mezzanine	8:00 am–8:00 pm
Trademark Search Library	8:00 am–5:30 pm
Scientific Library, Assignment Search Room, Microfilm Center, Patent Examining Organizations, and all other public access areas of the PTO	8:45 am–4:45 pm

THERESA A. BRELSFORD,
Sept. 8, 1982. *Acting Assistant Commissioner for Administration.*

Service of Court Papers on the Commissioner of Patents and Trademarks

Those having occasion to serve papers associated with court proceedings by mail are reminded that a special mailing address has been established to provide prompt forwarding to the Office of the Solicitor. The use of this address will ensure that the papers will not be delayed in dispatch. In court proceedings in which the Commissioner is a party, the notices of appeal to the U.S. Court of Appeals for the Federal Circuit and all service copies of papers filed in courts should be addressed:

Solicitor
Box 8
U.S. Patent and Trademark Office
Washington, D.C. 20231

Service copies of briefs and papers hand-carried to the Mail Room of the Patent and Trademark Office should likewise be addressed as shown above.

Joseph Nakamura,
Sept. 10, 1982. Solicitor.

DEPARTMENT OF COMMERCE

Patent and Trademark Office

37 CFR Part 2

[Docket No. 2816–154]

Trademark Applications, Filing Dates

AGENCY: Patent and Trademark Office, Commerce.

ACTION: Final rule.

SUMMARY: This document amends the rules of practice in trademark cases. The amendments are needed to reduce both the special handling required to process and control applications not entitled to a filing date and the delays such handling imposes on other applications. The amendments clarify the requirements for an application and allow the Office to return applications that fail to meet these requirements. The amendments also define with greater specificity the nature of the drawing and specimens which must accompany an application in order for it to be entitled to a filing date.

EFFECTIVE DATE: Oct. 4, 1982.

FOR FURTHER INFORMATION CONTACT: Alan B. Davidson by telephone at (703) 557-3916, or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

SUPPLEMENTARY INFORMATION: A notice of proposed rulemaking concerning the amendment of 37 CFR 2.21, 2.52, 2.54, and 2.57 and the deletion of §2.55 was published in the Federal Register on Oct. 7, 1981 (46 FR 49602). Interested parties were requested to submit written comments on or before Jan. 5, 1982. Comments were received from thirteen individuals and organizations and were given careful consideration.

One commenter suggested that the final sentence of §2.54, providing for correction of drawings by the Office, should not be deleted. The individual reasoned that minor alterations are more expeditiously handled by sending the drawing to the Office draftsman rather than returning it to the applicant. The administrative overhead of such a procedure was thought to be more costly than the correction process. This suggestion has not been adopted. Under the existing practice, simple deletions from drawings are made by Examiners and clerical personnel using gummed labels and opaque correction fluid. Due to the lack of facilities, drawings have not been sent to the Drafting Branch for correction for two years.

One commenter questioned whether the proposed revision of paragraph (d) of §2.52 required a date of first use for applications filed under the provisions of Section 44 of the Lanham Act. The revision was not intended to extend the use date requirement to such applications. Paragraph (d) has been reworded to eliminate any possible confusion.

Three commenters expressed unequivocal support for the proposed amendments. While two other commenters found them to be beneficial both to the Office and to applicants, they expressed some concern as to how the new practice will be implemented. One asked about the availability of proof of the initial date of filing should the papers be improperly returned by the Office. The other directed attention to the possibility that a self-addressed postcard, often submitted by an applicant, would be sent back bearing a mail date stamp and a serial number, and the application papers would be returned subsequently as incomplete.

The procedures that have been developed to implement the proposed changes should eliminate both of these concerns. All papers which constitute an application will be date stamped in the Mail Room prior to a review of their completeness. If an application fails to meet the requirements for receiving a filing date, a second stamp will be added to indicate that the papers are informal. A notation will also be placed on the application to indicate the nature of the omission that resulted in denying a filing date. Should the initial determination prove to be erroneous, reinstating the filing date should be a simple matter. Only applications deemed to be sufficient to receive a filing date will reach the processing stage at which a serial number is assigned and the postcard returned. Hence, there should be no instances in which the papers are returned but the self-addressed postcard indicates they are accepted.

One commenter recommended further revisions to §§2.21(a)(6) and 2.52(d). The individual thought an application based on Sections 44(d) or 44(e) of the Lanham Act should be required to include complete information on the foreign application or registration claimed. In addition, the country of origin, the application or registration number, and relevant dates were suggested as required components of the heading of the drawing. These recommendations have not been adopted. Such information, while helpful, is not essential to the initial examination of an application. Much of the information is available from the certification or certified copy of the foreign registration that must accompany the application papers. While placing Section 44 information on the drawing may be of some convenience, it is not needed in order to perform a normal search.

The principal area of concern to commenters involved the revisions of §§2.52(d) and 2.21(a)(6) which make the heading on the drawing a requirement for receiving a filing date. The six commenters who addressed themselves to this issue believed the changes placed form over substance and imposed a penalty too severe for a strictly administrative problem. They believed that the potential impact of the new procedure on applicants' substantive rights far outweighed the current inconvenience to the Office. Alternative proposals were advanced for eliminating the problem of clerks interrupting classification work to add or complete headings on drawings. One called for imposing a penalty fee for applications with incomplete drawings. Another would require the Office to hold such applications for a reasonable time while the applicant corrected the deficiency. The original filing date would be awarded once compliance was achieved. One suggestion would allow an application to receive a filing date upon substantial compliance with the drawing requirements.

A survey conducted by the Patent and Trademark Office recently showed additional processing was required to add or complete the headings on the drawings in 14% of all applications. This means remedial action is necessary for approximately 8500 applications annually. Each time an application clerk is required to add or complete the heading on a drawing, processing of other applications is slowed. As a result, the mailing of filing receipts and the filing of copies of the application drawings in the Trademark Search Library cannot be accomplished in the most timely manner.

Inadequate preparation of drawings affects the public as well as the Office. Users of the Trademark Search Room need certain basic information about each new mark in order to identify marks likely to cause confusion with other pending and registered marks. Unless this information is displayed on the drawings, the searcher must attempt to locate the application files, the only alternative source of the information.

The imposition of penalty fees or the establishment of a grace period for correcting deficiencies would not eliminate the potential difficulties for Search Library users. If drawings without complete headings were held pending correction, the search copies of all application drawings received by the Office on a given day would not be filed at the same time in the Search Library. The potential impact on a party making a search could be severe should a conflicting mark bearing a filing date a month or more old appear after a search that should have revealed it has been conducted. For these reasons, the suggestions were not adopted.

One commenter explicitly stated, and others implied, a fear of overzealous enforcement of the amended rules. The Office will make every effort to interpret the rules sensibly. The Office will make every effort to interpret the rules sensibly. For instance, an application will not be denied a filing date because of the absence of a zip code or other non-critical part of an address. No letter-by-letter comparison of an applicant's name appearing on the drawing and in the application will be made. Detailed procedures and guidelines for the Office's clerical personnel should ensure a reasonable and evenhanded approach. The implementation of the rules will be monitored carefully for the first several months.

Environmental and Other Considerations

This rule changes will not have any significant impact on the quality of the human environment or the conservation of energy resources.

These rule changes will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, 5 U.S.C. 601 *et seq.*) The rule changes will clarify application requirements, simplify existing procedures, and expedite procedings before the Patent and Trademark Office.

The Patent and Trademark Office has determined that these rule changes do not constitute major rules as defined in Section 1(b) of Executive Order 12291 (45 FR

13193), since they would benefit trademark applicants and reduce the burdens on the Office.

These rule changes will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*, since no significant additional record keeping or reporting requirements are placed on the public.

List of Subjects in 37 CFR Part 2

Administrative practice and procedure, Trademarks.

PART 2—RULES OF PRACTICE IN TRADEMARK CASES

Amendment to Regulations

In consideration of the comments received and pursuant to the authority of the Commissioner of Patents and Trademarks under 15 U.S.C. 1123, Part 2 of Title 37, Code of Federal Regulations is amended as set forth below.

1. Section 2.21 is revised to read as follows:

§2.21 Requirements for receiving a filing date.

(a) Materials submitted as an application for registration of a mark will not be accorded a filing date as an application until all of the following elements are received:

(1) Name of the applicant;

(2) A name and address to which communications can be directed;

(3) A drawing of the mark sought to be registered containing the information required by paragraph (d) of §2.52;

(4) An identification of goods or services;

(5) At least one specimen or facsimile of the mark as actually used;

(6) A date of first use of the mark in commerce, or a certification or certified copy of a foreign registration if the application is based on such foreign registration pursuant to section 44(e) of the Trademark Act, or a claim of the benefit of a prior foreign application in accordance with section 44(d) of the Act:

(7) The required filing fee for at least one class of goods or services. Compliance with one or more of the rules relating to the elements specified above may be required before the application is further processed.

(b) The filing date of the application is the date on which all of the elements set forth in paragraph (a) of this section are received in the Patent and Trademark Office.

(c) If the papers and fee submitted as an application do not satisfy all of the requirements specified in paragraph (a) of this section, the papers will not be considered to constitute an application and will not be given a filing date. The Patent and Trademark Office will return the papers and any fee submitted therewith to the person who submitted the papers. The Office will notify the person to whom the papers are returned of the defect or defects which prevented their being considered to be an application.

2. Section 2.52 is amended by revising paragraph (d) to read as follows:

§2.52 Requirement for drawings.

* * * * *

(d) *Heading.* Across the top of the drawing, beginning one inch (2.5 cm.) from the top edge and not exceeding one fourth of the sheet, there must be placed a heading, listing in separate lines, applicant's complete name, applicant's post office address, the dates of first use of the mark and first use of the mark in commerce (except for an application filed under section 44 of the Trademark Act), and the goods or services recited in the application or a typical item of the goods or services if a number of items are recited in the application. This heading should be typewritten.

* * * * *

3. Section 2.54 is revised to read as follows:

§2.54 Informal drawings.

A drawing not in conformity with §2.51 or paragraphs (a), (b), (c), or (e) of §2.52 or §2.53 may be accepted for purpose of examination, but the drawing must be corrected or a new one furnished, as required, before that mark can be published or the application allowed.

§2.55 [Removed]

4. Section 2.55 is removed.

5. Section 2.57 is revised to read as follows:

§2.57 Facsimiles.

(a) When, due to the mode of applying or affixing the trademark to the goods, or to the manner of using the mark on the goods, or to the nature of the mark, specimens as above stated cannot be furnished, five copies of a suitable photograph or other acceptable reproduction, not to exceed 8-1/2 inches (21.6 cm.) wide and 13 inches (33.0 cm.) long, and clearly and legibly showing the mark and all matter used in connection therewith, shall be furnished.

(b) A purported facsimile which is merely a reproduction of the drawing submitted to comply with §2.51 will not be considered to be a facsimile depicting the mark as actually used on or in connection with the goods or in connection with the services.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Aug. 13, 1982.

[FR Doc. 82-24158 Filed 9-1-82; 8:45 am]

BILLING CODE 3510-16-M

PATENT NOTICES

Certificates of Correction for the Week of Oct. 5, 1982

3,693,480	4,307,613	4,330,239	4,338,053
4,038,475	4,309,198	4,330,339	4,338,062
4,156,939	4,309,714	4,330,654	4,338,064
4,158,667	4,313,516	4,331,025	4,338,266
4,183,894	4,316,796	4,331,056	4,338,574
4,204,989	4,317,842	4,331,130	4,339,225
4,215,621	4,318,997	4,331,131	4,339,255
4,232,061	4,319,009	4,331,705	4,339,437
4,233,068	4,319,585	4,331,821	4,339,452
4,234,792	4,320,387	4,332,925	4,339,784
4,237,045	4,320,568	4,332,946	4,340,379
4,237,218	4,321,085	4,332,948	4,340,628
4,250,513	4,321,159	4,332,954	4,340,801
4,252,662	4,321,385	4,333,048	4,341,046
4,256,444	4,321,881	4,333,096	4,341,063
4,263,325	4,322,102	4,333,125	4,341,277
4,266,387	4,322,549	4,333,328	4,341,355
4,267,096	4,323,306	4,333,942	4,341,473
4,267,936	4,323,990	4,334,470	4,341,602
4,274,721	4,325,146	4,334,489	4,341,620
4,276,772	4,325,663	4,334,495	4,341,676
4,290,055	4,326,082	4,334,708	4,341,941
4,293,494	4,327,007	4,334,944	4,342,215
4,293,502	4,327,116	4,335,006	4,342,593
4,293,725	4,327,246	4,335,229	4,342,799
4,296,078	4,327,915	4,335,528	4,342,834
4,296,540	4,327,959	4,336,312	4,342,894
4,297,245	4,328,062	4,336,619	4,343,071
4,301,318	4,328,167	4,336,856	4,343,079
4,302,941	4,328,238	4,336,866	4,343,450
4,302,988	4,328,364	4,336,983	4,343,456
4,303,679	4,328,494	4,337,009	4,343,560
4,304,211	4,328,550	4,337,061	4,343,818
4,305,824	4,328,608	4,337,116	4,344,011
4,306,106	4,328,768	4,337,628	4,344,059
4,306,270	4,328,883	4,337,727	4,344,175
4,306,480	4,329,061	4,337,788	4,344,942
4,306,908	4,330,237	4,337,805	

Disclaimers

4,044,977.—*Dennis D. Feucht,* Morton, Ill. BUSHING TYPE MOUNT WITH TRIPLE SPRING RATE. Patent dated Aug. 30, 1977. Disclaimer filed Aug. 20, 1982, by the assignee, *Caterpillar Tractor Co.*

Hereby enters this disclaimer to claims 1 through 9 of said patent.

4,277,399.—*Eugen Diethelm,* Triesen, Liechtenstein. PROCESS FOR PREPARING PYRENZEPINE. Patent dated July 7, 1981. Disclaimer filed Mar. 23, 1982, by the assignee, *Grissman Chemicals Ltd.*

Hereby enters this disclaimer to all claims of said patent.

4,286,011.—*Andrew H. Wong,* St. Paul, Minn. POLYESTER FILMS WITH IMPROVED PROCESSABILITY AND TEAR RESISTANCE. Patent dated Aug. 25, 1981. Disclaimer filed Aug. 13, 1982, by the assignee, *Minnesota Mining and Manufacturing Co.*

Hereby enters this disclaimer to all claims of said patent.

4,332,442.—*Kaneyas Ookawa,* Tokyo, Japan. REPRODUCING OBJECTIVE FOR VIDEO DISKS. Patent dated June 1, 1982. Disclaimer filed July 20, 1982, by the assignee, *Olympus Optical Co. Ltd.*

The term of this patent subsequent to March 24, 1998 has been disclaimed.

Dedication

3,829,348.—*Jacob Spiegel,* Philadelphia, Pa. and *Albert R. Miller,* Somerdale, N.J. DECORATIVE THREE-DIMENSIONAL OBJECTS. Patent dated Aug. 13, 1974. Dedication filed July 26, 1982, by the assignee, *Gilbreth International Corp.*

Hereby dedicates to the Public the remaining term of said patent.

Disclaimers and Dedications

Re. 30,028.—*David L. Purdy,* Indiana, *George J. Magovern,* Pittsburgh, Pa., and *Nicholas P. D. Smyth,* Washington, D.C. HEART PACER. Patent dated June 12, 1979. Disclaimer and Dedication filed Jan. 15, 1982, by the assignee, *Coratomic, Inc.*

The term of this patent subsequent to Oct. 19, 1990 has been disclaimed and dedicated to the Public.

4,211,085.—*Lewis Tyree, Jr.,* Oak Brook, Ill. SYSTEMS FOR SUPPLYING TANKS WITH CRYOGEN. Patent dated July 8, 1980. Disclaimer and Dedication filed Oct. 20, 1980, by the inventor.

Hereby disclaims and dedicates all claims of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

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Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

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	St. Louis Public Library	(314) 241-2288 Ext. 214, 215
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New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
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*Collection organized by subject matter.

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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF September 4, 1982

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	10-06-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	9-17-80
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	5-13-81
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	4-20-81
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-09-81
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	9-12-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	9-18-80
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	6-30-80
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	7-30-80
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-26-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	7-21-80
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	12-12-80
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director ... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	11-05-80
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	2-13-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	6-30-82
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	7-25-80

Expiration of patents: The patents within the range of numbers indicated below expire during September 1982, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,204,251 to 3,209,368, inclusive

Plant Patents ..... Numbers 2,552 to 2,557 inclusive

REEXAMINATIONS

OCTOBER 5, 1982

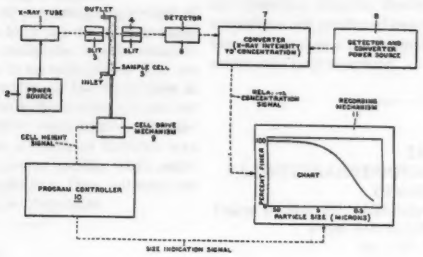
Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination

B1 3,449,567 (22nd)

APPARATUS AND PROCESS FOR DETERMINING PARTICLE SIZE BY X-RAY ABSORPTION ANALYSIS

James Peter Oliver; George K. Hickin, Macon, Ga., assignors to Freeport Minerals Company, New York, N.Y.

Reexamination Request No. 90/000,065, Sep. 8, 1981.
Reexamination Certificate for Patent No. 3,449,567, issued Jun. 10, 1969, Ser. No. 610,841, Jan. 23, 1967.
U.S. Cl. 250/362 **Int. Cl.[3] G01T 1/20.**



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 2, 3 and 5 is confirmed.

Claims 1 and 4 are determined to be patentable as amended:

1. A process for automatically and rapidly determining particle size distribution of finely divided particles in suspension in a liquid medium based on the application of Stokes' Law of sedimentation, comprising

continuously determining the concentration of particles at continuously decreasing sedimentation distances by means of continuously measuring the transmittance of X-rays through the suspension,

continuously converting this transmittance measurement to a quantity proportional to the concentration of suspended material in the X-ray beam at a particular instant, and

continuously recording the concentration on one ordinate of a graph [with] *and continuously recording particle size on* the other ordinate; *the location on said other ordinate, being recorded,* automatically [positioned] *moving with decreasing sedimentation distance at every instant* to indicate simultaneously particle size at every instant.

EXAMINATIONS

OCTOBER 3, 1959

DEFENSIVE PUBLICATIONS

PUBLISHED OCTOBER 5, 1982

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T102,301
USE OF POLYETHYLENE WAXES TO CONTROL METAL ORIENTATION IN PAINTS

Kenneth R. Walker, 11 Conway Dr., Billinge, Wigan, Lancs, England

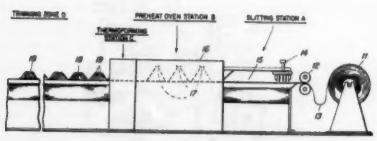
Filed Oct. 29, 1981, Ser. No. 316,370
Int. Cl.³ C08K *5/09*
U.S. Cl. 524—556
No Drawing. 7 Pages Specification

This invention relates to a method of preparing dispersions of low density polyethylene waxes which can be a chemically modified polyethylene wax or low molecular weight unmodified polyethylene wax and their use in metallic paints. The use of these dispersions prevents hard settling of the metal flake in the liquid paint which was measured to be better than the use of a dispersion made from an ethylene vinyl acetate wax dispersion (AC 405 wax). Also the use of such an Epolene wax dispersion allowed the paint to be sprayed rapidly while maintaining better appearance and smoothness than without any wax or an ethylene vinyl acetate wax dispersion.

T102,302
METHOD FOR THE PRODUCTION OF APERTURES IN POLYSTYRENE FOAM SHEET

Nicholas D. Commisso, 19 Dryer Ave., Victor, N.Y. 14564

Continuation of Ser. No. 88,788, Oct. 29, 1979, abandoned, which is a continuation of Ser. No. 951,547, Oct. 16, 1978, abandoned, which is a continuation of Ser. No. 829,126, Aug. 30, 1977, abandoned, which is a continuation of Ser. No. 633,777, Nov. 20, 1975, abandoned. This application Sep. 2, 1981, Ser. No. 298,709
Int. Cl.³ B12B *1/48*
U.S. Cl. 264—154
4 Sheets Drawing. 18 Pages Specification



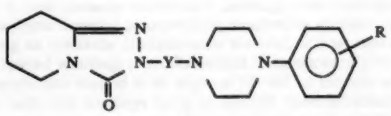
A method and apparatus for producing apertures such as ventilation holes and the like in a preformed sheet of polystyrene foam which comprises forming slits which extend completely through the foam structure, the slits being arranged in a predetermined pattern, and passing the preslit foam through a heating zone such as a preheat oven used in plastic thermoforming operations. The resultant heated sheet of foam, as it emerges from the oven, is characterized by having a plurality of openings or apertures in locations corresponding to the slits which were made in the foam prior to preheating. The aperture containing sheets may be subsequently subjected to a thermoforming operation whereby thermoformed objects such as produce containers are produced having ventilation openings, i.e. apertures, located in a predetermined disposition around the thermoformed tray structure.

T102,303
5,6,7,8-TETRAHYDROTRIAZOLO{4,3-ALPHA}-PYRIDIN-3(2H)-ONES

Duane F. Morrow, 8200 Berry Dr., Evansville, Ind. 47710

Filed Jun. 8, 1981, Ser. No. 271,296
Int. Cl.³ C07D *403/06*
U.S. Cl. 544—362
No Drawing. 10 Pages Specification

5,6,7,8-Tetrahydrotriazolo{4,3-a}pyridin-3(2H)-one derivatives containing a 4-(optionally substituted phenyl)piperazinyl component attached to the 2- position of the tetrahydrotriazolo{4,3-a}pyridinone component via an alkylene chain of 3 or 4 carbon atoms are disclosed. Examples are compounds having the formula



wherein R is lower alkyl or alkoxy (each having 1 to 4 carbon atoms inclusive), cyano, halogen, or trifluoromethyl; and Y is an alkylene chain of 3 or 4 carbon atoms. The compound in which R is 3-Cl and Y is trimethylene exhibits central nervous system pharmacological properties in standard laboratory tests which are predictive of useful anti-psychotic, antidepressant, and antianxiety action.

REISSUES

OCTOBER 5, 1982

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

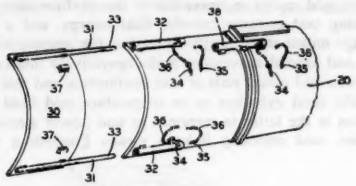
Re. 31,045
SNOWPLOW BLADE EXTENSION

Albert E. Essell, deceased, late of Twinsburg, Ohio; by Virginia G. Essell, executrix, 9324 Ravenna Rd., Twinsburg, Ohio 44087; Robert A. T. Essell, 6158 State Rte. 303, Ravenna, Ohio 44266, and Christopher W. Essell, 9324 Ravenna Rd., Twinsburgh, Ohio 44087

Original No. 4,073,077, dated Feb. 14, 1978, Ser. No. 756,148, Jan. 3, 1977. Application for reissue Feb. 22, 1980, Ser. No. 123,671

Int. Cl.³ E01H *5/00*

U.S. Cl. 37—281 **10 Claims**



1. The combination of a snowplow blade on a motorized vehicle, with a tubular socket which extends longitudinally of the blade on its back surface and which is an immovable part of the blade structure, and with a removable extension of a shape corresponding to that of the blade and from which projects a longitudinal stud fitting the socket for removably holding the extension in a working position beyond an end of the blade, and a locking device for preventing unintended motion of the stud out of the socket.

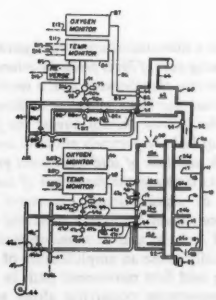
Re. 31,046
INCINERATION METHOD AND SYSTEM

Luis A. Lombana, and Jose G. Campos, both of Belmont, Calif., assignors to Lurgi Corporation, Belmont, Calif.

Original No. 4,013,023, dated Mar. 22, 1977, Ser. No. 645,063, Dec. 29, 1975. Application for reissue Aug. 15, 1979, Ser. No. 66,701

Int. Cl.³ F23G *5/12*

U.S. Cl. 110—187 **13 Claims**



25. A method of incinerating partially dewatered sewage sludge containing organic wastes in a multiple hearth furnace equipped with an afterburner connected to receive gases and vapors from the furnace, said method comprising the following steps:

a. introducing the partially dewatered wastes into the multiple hearth furnace and moving the same downwardly therethrough by rabbling;

b. introducing air and fuel into the furnace to pyrolyze the wastes and regulating the introduction of the air and fuel so that the atmosphere within the furnace is deficient in oxygen and so that the organic substances which are pyrolyzed from the wastes are only partially oxidized;

c. introducing air into the afterburner in quantities in excess of that required to complete the oxidation of the partially oxidized substances carried by the gases and vapors from the furnace and regulating the quantity of air introduced into the afterburner to maintain temperatures therein within a predetermined range;

d. introducing fuel into said afterburner when the temperature within said afterburner falls below a first predetermined value; and

e. monitoring the oxygen content of the gases and vapors within the afterburner and stopping the introduction of fuel into the afterburner when the monitoring oxygen content is less than a predetermined value and the temperature in the afterburner is above said first predetermined value.

Re. 31,047
HOSE STRUCTURE

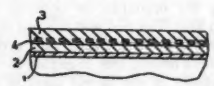
John A. Ross, Tandragee, Northern Ireland, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Original No. 4,157,101, dated Jun. 5, 1979, Ser. No. 867,215, Jan. 5, 1978. Continuation-in-part of Ser. No. 854,572, Nov. 25, 1977, abandoned, which is a continuation of Ser. No. 691,731, Jun. 1, 1976, abandoned. Application for reissue Jan. 24, 1980, Ser. No. 114,859

Claims priority, application United Kingdom, Jun. 6, 1975, 24505/75; Jun. 29, 1977, 27180/77

Int. Cl.³ F16L *11/00*

U.S. Cl. 138—130 **17 Claims**



1. A large diameter suction and discharge hose comprised of elastomeric material incorporating reinforcing elements comprising an innertube of elastomeric material, at least two radially spaced windings of monofilament lying outwardly of said innertube and wound at an angle of 50°–60° to the axis of the hose with said windings being of opposite hand orientation, a layer of elastomeric material having a thickness of at least 5% of the hose diameter between the windings of monofilament, a cover layer of elastomeric material around the outer surface of the hose, at least one layer of aramid fabric positioned in the wall of the hose between the innertube and cover layer adjacent to at least one of the windings of monofilament, and an elastomeric adhesive layer between the monofilament and aramid fabric to effect a bond between the two upon vulcanization of the integral structure.

11. A large diameter suction and discharge buoyant hose comprised of elastomeric material incorporating reinforcing elements comprising an innertube of elastomeric material, at least two radially spaced windings of monofilament lying outwardly of said innertube and wound at an angle of 50°–60° to the axis of the hose with said windings being of opposite hand orientation, a layer of cellular polymeric foam material between the windings of monofilament and taken from the

group comprising natural rubber, styrene butadiene rubber, polychloroprene rubber, cross-linked polyethylene, cross-linked ethylene vinylacetate copolymer, polyurethane or plasticized polyvinyl chloride, the density being in the range of 0.01 to 0.75 grms/ml and a thickness of at least 5% of the hose diameter, and a cover layer of elastomeric material around the outer surface of the hose, the completed hose being vulcanized into an integral structure.

Re. 31,048

TREE DESTROYER

Leward N. Smith, Remus, Mich., assignor to Morbark Industries, Inc., Winn, Mich.

Original No. 3,661,333, dated May 9, 1972. Application for reissue Jan. 24, 1978, Ser. No. 871,783

Int. Cl.³ B02C *18/22*; B27L *11/02*

U.S. Cl. 241—281 **49 Claims**

Before the filing of this reissue application a disclaimer under 35 U.S.C. 253 in U.S. Letters Patent No. 3,661,333 disclaiming Claims 1–3, 7–12, 14–16, 18, 19, 34, 35, 38 and 39 of that patent.

1. (*Disclaimed as of March 24, 1976*). Tree destroying apparatus for reducing a felled tree, having attached limbs and branches, to chips comprising:

a longitudinally extending frame having front and rear ends;

chipping means thereon for chipping said tree into chips at a chipping station having a generally rearward facing entrance opening for passing trees thereto trunk-first;

means on said frame for feeding said tree in a longitudinal path of travel toward said chipping means including;

a generally horizontal, tree supporting feed bed including power driven, longitudinally extending conveyor means;

a generally laterally extending, endlessly driven member having tree engaging surfaces supported above said feed bed and cooperating with said conveyor means to form a tree feeding drive nip rearwardly of said entrance opening for securely gripping vertically opposite sides of a tree positioned on the feed bed to crush branches vertically toward the tree trunk and to move the tree forwardly toward said chipping means;

means on said frame supporting said member for endless travel;

upstanding, laterally spaced, limb and branch folding members positioned on opposite sides of said conveying means for engaging the branches on opposite sides of a tree supported on said feed bed and folding the tree branches laterally toward the tree trunk, said upstanding branch folding members having tree engaging surfaces positioned laterally inwardly of the lateral sides of said member to insure that laterally extending branches are folded inwardly toward the tree trunk and can enter said entrance opening; and

drive means on said frame for driving said member and conveying means at coordinated tree feeding speeds.

3. (*Disclaimed as of March 24, 1976*). The apparatus as set forth in claim 1 in which directing means is provided on one of said conveyor means or member for moving a tree toward centered position on said feed bed.

4. (*Disclaimed as of March 24, 1976*). The apparatus as set forth in claim 3 in which said laterally extending member comprises a roll and directing means for moving a tree toward centered position on said feed bed is provided thereon.

Re. 31,049

FUEL-OPERATED DEVICE

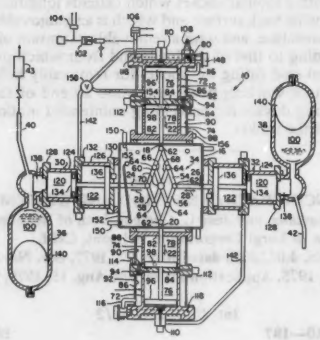
William S. Brian, 25 Landing Rd., Huntington, N.Y. 11743

Original No. 4,093,405, dated Jun. 6, 1978, Ser. No. 764,751, Feb. 2, 1977. Application for reissue May 7, 1981, Ser. No. 246,654

Int. Cl.³ F04B *17/00, 35/00*

U.S. Cl. 417—343 **6 Claims**

1. An improved fuel-operated device comprising a pair of combustion cylinders having pistons therein each having slidably disposed piston rods extending therefrom operatively arranged in opposing facing relation to each other such that said piston rods are urged through power strokes towards each other along a first movement path, means for admitting a gas-producing type fuel for said combustion cylinders effective to cause an initially maximum pressure expanding gas in said cylinders for powering said piston rods through said power strokes, a pair of pressure transfer fluid cylinders having pistons therein each having slidably disposed piston rods extending therefrom operatively arranged in opposing facing relation to each other such that said *transfer cylinder* piston rods are urged through fluid pressure strokes away from each other along a second movement path oriented perpendicularly and in crossing relation to said first movement path, passage means connected from said pressure transfer fluid cylinders to a storage means for flowing said pressure transfer fluid thereto, an outlet connection from said storage means to a pressure fluid-operated motor for allowing said pressure transfer fluid to power said motor in operation in the performance of work utilizing said pressure transfer fluid energy, and a coupling linkage means strategically located at the intersection of said first and second movement paths operatively interconnected between said piston rods of said combustion and said pressure transfer fluid cylinders so as to produce said fluid pressure strokes in the latter in response to said power strokes of the former, said coupling linkage means [including pivotally



interconnected links in a diamond-shaped configuration] *comprising a first criss-crossing pair of links pivotally interconnected to each other at an intersection therebetween and a second cooperating group of an additional four links bounding a diamond-shaped configuration and in the interior thereof having the free ends of said criss-crossing pair of links respectively pivotally connected to a medial location to each said link of said additional group of four links such that the links defining the four ends of said diamond shape are adapted to be urged through movement in opposite directions along first and second movement paths and wherein the interconnection of said links in said diamond-shaped configuration is* effective to initially cause an amplification of said movement occurring along said first movement path in said corresponding extent of movement occurring along said second movement path and subsequently a reversal therein, whereby despite an initial maximum pressure in said expanding gas of said fuel there is produced in said fluid a pressure at a desirable starting minimum value which subsequently builds up therein to thereby contribute to the efficiency of the conversion of said fuel energy into usable pressure fluid energy.

Re. 31,050

HOISTING DEVICE

Manfred Harig, Lindlar-Linde, Fed. Rep. of Germany, assignor to N.V. Western Gear Europe, S.D., Aartselaar, Belgium

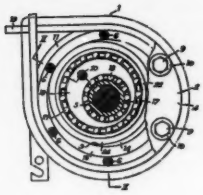
Original No. 4,074,582, dated Feb. 21, 1978, Ser. No. 722,764, Sep. 13, 1976. Application for reissue Nov. 8, 1978, Ser. No. 958,696

Claims priority, application Belgium, Sep. 26, 1975, 254583; Dec. 1, 1975, 254684

Int. Cl.³ F16H *55/36, 55/62*

U.S. Cl. 474—10 37 Claims

1. Hoisting device, characterized by the fact that it mainly consists of a housing to which [the load is] *a load is adapted to be* suspended and in this housing a driving pulley *rotatable about a first axis and* consisting of two half pulleys for a cable, which is *adapted to be* suspended from a fixed point, whereby this [driving] pulley is provided with means which *continuously* press the cable *substantially* uniformly [or practically uniformly] into the [driving] pulley [over] *throughout* a large arc, and with means which *continuously* press aforesaid



half pulleys away from each other [at] *with respect to said first axis throughout a smaller arc which extends between* the locations where the cable enters and leaves the pulley, in such a manner that *substantially* no friction occurs when the cable enters or leaves the [driving] pulley, whereby this pressing apart is performed in such a manner that *substantially* no [or practically no] increase of pressure occurs on the cable on the other side of the pulley *and whereby the sum of the large arc and the smaller arc equals 360 degrees.*

Re. 31,051

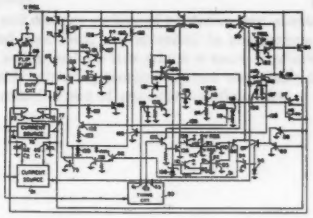
REGULATOR FOR CONTROLLING CAPACITOR CHARGE TO PROVIDE COMPLEX WAVEFORM

William F. Davis; Howard G. Shumway, both of Tempe, Ariz., and Thomas M. Frederiksen, San Jose, Calif., assignors to Motorola Inc., Schaumburg, Ill.

Original No. 3,727,081, dated Apr. 10, 1973, Ser. No. 189,630, Oct. 15, 1971. Application for reissue Apr. 10, 1975, Ser. No. 566,868

Int. Cl.³ H03K *4/02, 4/12*

U.S. Cl. 307—260 51 Claims



1. A circuit for developing across a capacitor a waveform having a plurality of different voltage levels at least one of which is greater than the preceding level and at least one of which is less than the preceding level, such circuit including in combination, reference means providing a plurality of reference voltages representing the different voltage levels of the waveform, regulator means coupled to said reference means and to the capacitor for selectively holding the voltage thereacross at a value associated with one of the reference voltages, *said regulator means including a differential amplifier,* discharge circuit means connected to the capacitor and to said regulator means and adapted to be rendered operative by said regulator means to discharge the capacitor and reduce the voltage thereacross until a selected one of the voltage levels is reached, and current source means connected to the capacitor and adapted to operate to supply current thereto to increase the voltage thereacross until another one of the voltage levels is reached.

PLANT PATENTS

GRANTED OCTOBER 5, 1982

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,892

ROSE PLANT

Charles P. Elliott, 2208 Monterey Ave., Santa Clara, Calif. 95051

Filed Jan. 29, 1981, Ser. No. 229,771
Int. Cl.³ A01H 5/00
U.S. Cl. Plt.—28 **1 Claim**

1. A new and distinct cultivar of rose, substantially as described and pictured herein, characterized by its small ruffled red-pink blooms, vigorous growth and persistence.

4,893

NECTARINE TREE

John H. Weinberger, Fresno, Calif., assignor to Superior Farming Company, Bakersfield, Calif.

Filed Jan. 12, 1981, Ser. No. 224,164
Int. Cl.³ A01H 5/00
U.S. Cl. Plt.—41 **1 Claim**

1. A new and distinct variety of nectarine tree, substantially as shown and described, characterized in comparison to the May Grand nectarine by a tree which is more productive and fruit which is in harvest approximately one week later, the fruit being more rounded and of smoother configuration.

PATENTS

GRANTED OCT. 5, 1982

ERRATA

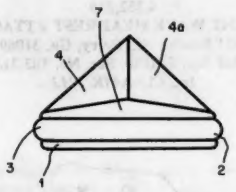
For CLASS	See PATENT NO.
114–363	4,352,218
464–109	4,352,276
374–110	4,352,290
114–344	4,352,668
525–149	4,352,749
523–156	4,352,750
549–258	4,352,755
549–497	4,352,756
549–513	4,352,757
549–521	4,352,758
378–014	4,352,986
378–150	4,352,987

PATENTS

GRANTED OCTOBER 5, 1982

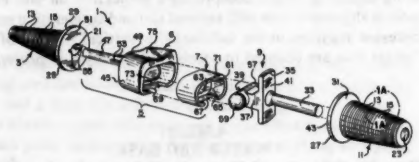
GENERAL AND MECHANICAL

4,352,211
CARDIAC VALVE PROSTHESIS
Roberto Parravicini, Corso Genova, 13, 20100 Milan, Italy
Filed Jan. 12, 1981, Ser. No. 224,297
Claims priority, application Italy, Jan. 16, 1980, 19242 A/80
Int. Cl.³ A61F *1/22*
U.S. Cl. 3—1.5 **4 Claims**



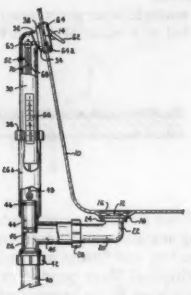
1. An artificial cardiac valve which comprises a first ring member (1) capable of acting as a valve seat, a second plastic material ring member (3) encompassing the first ring member and acting as an anchoring member for tying the cardiac valve to the host tissue, two arcuated valve members (4, 4*a*) capable of acting as a shutter, each arcuated valve member being provided in the center of its edge with a lug (5, 15), said lug being integral with each of said valve members and having a ball-point portion (6, 16) at the end thereof, said first ring member (1) being provided with seats on the inner wall thereof at diametrically opposite positions, said lug being insertable into said seats with a clearance sufficient to permit free movement of the lug.

4,352,212
JOINT PROSTHESIS
David J. Greene, Boston, Mass., and Peter S. Walker, Ridgewood, N.J., assignors to Howmedica, Inc., New York, N.Y.
Continuation of Ser. No. 17,486, Mar. 5, 1979, abandoned. This application Jun. 20, 1980, Ser. No. 161,503
Int. Cl.³ A61F *1/03*
U.S. Cl. 3—1.91 **31 Claims**



1. A finger joint prosthesis for a finger joint of a first bone with a second bone comprising a first component, a second component in articulatory bearing relationship with said first component, said first component capable of being operatively connected to said first bone, and said second component capable of being operatively connected to said second bone, wherein the connections of said first and second components to said first and second bones, respectively, is such as to provide in normal use for mechanically unrestrained relative movement between each of said components and its bone longitudinally of said bone.

4,352,213
LINKAGE ADJUSTMENT ARRANGEMENT FOR A BATHTUB DRAIN ASSEMBLY
Robert R. Watts, Rte. 2, Box 153, Blue Springs, Mo. 64015
Filed Nov. 7, 1980, Ser. No. 205,002
Int. Cl.³ E03C *1/232*
U.S. Cl. 4—199 **4 Claims**



2. In a bathtub drain arrangement for a bathtub having a drain opening and an overflow opening, the improvement comprising:

a drain pipe adapted for connection with the drain opening;

a pair of telescoping tubes adapted to extend generally vertically between the overflow opening and drain pipe, said tubes interfitting in a telescoping manner to permit variation of the combined effective length thereof to accommodate variations in the distance between the drain and overflow openings;

a scale on one of said tubes cooperating with an indicator portion of the other tube to provide an indication of the combined effective length of said tubes;

a valve for controlling drainage through the drain opening;

a linkage for controlling the position of the valve, said linkage including a pair of links adapted to extend within said tubes, said links interfitting in a threaded manner to permit variation in the length of said linkage to accommodate variations in the combined effective length of said tubes;

a trip lever for actuating said linkage to adjust the position of said valve; and

a scale on one of said links cooperating with an indicator portion of the other link to provide an indication of the length of said linkage, thereby permitting adjustment of said links until the indications on said scales correspond to effect the linkage length required to properly position said valve for control of the drainage through the drain opening.

4,352,214
TOILET SEAT COVER
Roland Belz, Finkenweg 20, 7021 Leinfelden-Echterdingen, Fed. Rep. of Germany
Division of Ser. No. 872,580, Jan. 26, 1978, Pat. No. 4,261,066. This application Jul. 11, 1980, Ser. No. 167,707
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1977, 2703005
The portion of the term of this patent subsequent to Apr. 14, 1998, has been disclaimed.
Int. Cl.³ A47K *13/14*
U.S. Cl. 4—243 **15 Claims**

1. Toilet seat cover in the form of a blank consisting of at least one layer having a central opening, which layer com-

prises a non-porous flexible foil of a material which is soluble in an aqueous medium, fibrous material means bonded to one side of said foil, the fibres of said fibrous material means being freely exposed on the surface of the foil cover over part of their length, for providing at least a minimum barrier against moisture penetrating to the foil, and a sealing layer of waterproof and water insoluble material on that side of the foil which is remote from the fibres, wherein said fibrous means comprises individual fibres which are flocked to said foil to be bonded thereto over part of their length, and wherein said individual fibres are released when said cover is placed in water and said foil dissolves.

15. A multiple layer sheet material comprising a non-porous flexible foil of a material which is soluble in an aqueous me-

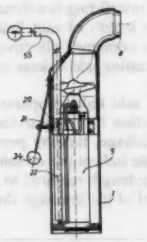
dium, fibrous material means bonded to one side of said foil for providing at least a minimum barrier against moisture penetrating to the foil, said fibrous material means comprising a plurality of individual fibres bonded to said foil over part of their length and being freely exposed on the surface of the foil over part of their length, and a sealing layer of waterproof and water insoluble material on that side of the foil which is remote from the fibres, wherein said individual fibres are released when said material is placed in water and said foil dissolves, wherein said sealing layer is insoluble in substantially neutral aqueous solutions but at least partly soluble in one of an acid and alkaline solution, and in which one of an acid and basic substance is incorporated in the foil for dissolving said sealing layer.

4,352,215

JET STREAM DEVICE

Karsten Laing, Herrenstrasse 57,, 7500 Karlsruhe, Fed. Rep. of Germany

Filed Apr. 17, 1980, Ser. No. 141,219
Claims priority, application Austria, Apr. 17, 1979, 2863/79
Int. Cl.³ E04H *3/16*
U.S. Cl. 4—492 **6 Claims**



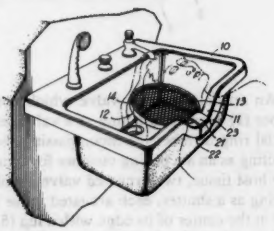
1. Jet stream device for a swimming pool, the device comprising a longitudinally extending housing having at one end an inlet and at the other end an outlet nozzle, a flow-constricting necking situated between the inlet and the nozzle, an axial impeller rotatable by an underwater motor with said impeller being situated in the necking with its axis of rotation extending parallel to the longitudional axis of the housing and to the left of a central plane passing through the housing and nozzle when rotatable in an anticlockwise direction when viewed through the nozzle and to the right of said central plane when rotatable in a clockwise direction when viewed through the nozzle, the smallest cross-sectional area of the necking being approximately the same size as that of the nozzle and the width of the housing being approximately the same size as that of the nozzle, two tubular suspension elements extending into the housing and bent to rest directly on the edge of a pool parallel thereto, means for adjustable attachment of the device to the suspension means, and means for keeping the device at a distance from a vertical wall of a swimming pool, the device being tiltable about a horizontal axis and consequently its outlet nozzle being tiltable about said horizontal axis.

4,352,216

PERMANENT WAVE HEADREST ATTACHMENT

Dale D. Grim, 511 Stanley St., Perry, Ga. 31069

Filed Sep. 2, 1980, Ser. No. 183,213
Int. Cl.³ A47K *3/12*
U.S. Cl. 4—523 **1 Claim**



1. A two part permanent wave headrest attachment for a sink comprising a one part foraminous panel adapted to bear the weight of the head of a subject with the head substantially centered over the well of the sink, so as to relieve uncomfortable pressure from the back of a subject's neck during rinsing, said panel being approximately horizontal during use, the forward end of the panel having an integral depending extension including a substantially vertical surface to bear against the interior of the sink front wall, and said extension having a substantially vertical slot formed therethrough substantially at right angles to the plane of said panel, a one part hanger element for the headrest formed separately from the panel and having a substantially vertical portion engageable adjustably through said slot and an upper terminal hook portion adapted to engage a forward flange of the sink, and cooperating means integral with said panel and said hanger respectively for adjustably securing said substantially vertical portion of the hanger element in said slot at different selected positions, said cooperating adjusting means comprising a projection on said extension in alignment with said vertical slot and cooperative spaced recessed portions in the substantially vertical portion of said hanger that are adapted to receive selectively said projection.

4,352,217

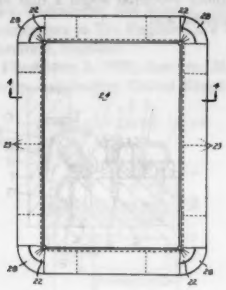
WATER BED BASE

Peter W. O'Rourke, 65 Wattle St., Fullarton, South Australia, Australia

Filed Mar. 21, 1980, Ser. No. 132,527
Int. Cl.³ A47C *27/08*
U.S. Cl. 5—451 **7 Claims**

1. Water mattress support means comprising a water mattress base having a flat bottom wall formed of flexible waterproof sheet material, raised sides extending around the periphery of the bottom wall, and corner flaps interposed between the sides, each side comprising a sleeve of flexible waterproof sheet material and resilient bolster (infill) means inserted therein, the resilient bolster means comprising corner members, the bottom wall and the peripheral wall sides coopera-

tively defining together a recess the dimensions of which are such that it can accommodate a water mattress, and the corner



flaps engaging against the bolster corner members such that the water mattress base comprises a leakproof receptacle.

4,352,218

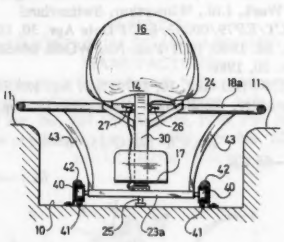
MOBILE CHAIR

Lars Lundberg, Box 28, Fjällbacka, Sweden (45071)

Filed Oct. 18, 1979, Ser. No. 86,148

Int. Cl.³ B63B *29/00*

U.S. Cl. 114—363 **6 Claims**



1. A mobile chair as used in a boat having a fore and aft running well and thwarts located sidewards thereof and having a seat and a foot-rest and further comprising:

two parallel guide rails mounted longitudinally at said well,

a base plate having means for displacement along said guide rails,

a vertical trunnion for pivotably mounting said foot-rest at said base plate,

an arcuate guide, concentric with said trunnion and having a full annular extension,

means for carrying said arcuate guide freely suspended above said base plate and permitting movement together with the same in the direction of said guide rails, and

a back-stay directed away from said base plate and having means for mounting said seat upon said arcuate guide for sliding movement thereupon, said arcuate guide having a diameter permitting the seat to be swung to positions above either thwart.

4,352,219

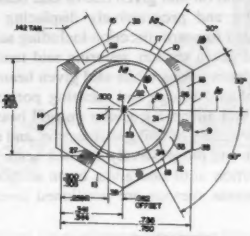
PREVAILING TORQUE LOCK NUT AND METHOD OF FORMING SAME

John C. McMurray, 6957 N. Meadow Dr., Painesville, Ohio 44077, and Arthur G. Kudelko, 7434 Crown Ct., Mentor, Ohio 44060

Division of Ser. No. 17,611, Mar. 5, 1979, Pat. No. 4,291,737. This application Apr. 7, 1981, Ser. No. 251,779

Int. Cl.³ B21D *53/20*

U.S. Cl. 10—86 A **4 Claims**



1. A method of producing hexagonal prevailing torque lock nuts comprising forming a tubular blank with a load face at one end, a cone portion at the other end and a hexagonal wrenching portion therebetween wherein said cone portion is formed with three peripherally positioned lobes each of which is substantially a portion of a right circular cone having an axis parallel to and eccentric with respect to the central axis of said blank, said lobes being joined by substantially tangential portions and each being aligned with a flat of said wrenching portion, threading said blank with a uniform diameter thread, and thereafter applying a staking force to said cone portion with a tool having a blank engaging surface operable to deform said lobes at least along the end thereof to a substantially circular shape in the vicinity of locking zones and to displace portions of said thread within said lobes radially inward to produce three locking sections which provide an interference fit with a mating threaded fastener.

4,352,220

METHOD FOR THE CONSTRUCTION OF A CABLE-STAYED OR REIN-GIRTH BRIDGE

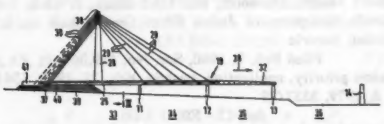
Hans Wittfoht, Kelkheim, Fed. Rep. of Germany, assignor to Polensky & Zollner, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 28, 1980, Ser. No. 181,963

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1979, 2938029

Int. Cl.³ E01D *1/00*

U.S. Cl. 14—1 **6 Claims**



1. A method of constructing a cable-stayed or rein-girth bridge having opposite ends and including stiffening beam means comprised of a plurality of beam sections in ridigly joined end-to-end relationship between said opposite ends, pylon means extending upwardly relative to a given one of said beam sections between said ends and having an upper end, a plurality of tension means extending from said pylon means to spaced locations along said stiffening beam means, and upright pier means between said opposite ends and underlying said given one of said beam sections and said pylon means, compris-

ing the steps of: constructing said pier means, constructing said beam sections individually at at least one of said opposite ends of said bridge and to include anchoring means for said tension means on beam sections forwardly and rearwardly of said given section with respect to the direction from said one end of said bridge toward the other, sequentially joining individual beam sections at said one end including said sections forwardly of said given section, supporting said joined sections at said one end and progressively displacing said joined sections in said forward direction, erecting upright support means at said one end of said bridge and on said given one of said beam sections, sequentially joining and progressively displacing additional beam sections in said forward direction including said sections rearwardly of said given section, securing said tension means to said upright support means while said given beam section is at said one end of said bridge and securing portions of said tension means to said anchoring means on said beam sections forwardly and rearwardly of said given section, and continuing to sequentially join and progressively displace beam sections in said forward direction until said given beam section and said upright support means thereon are positioned over said pier means.

4,352,221

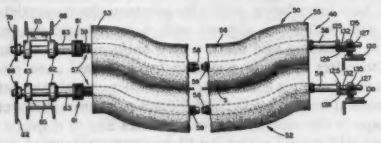
APPARATUS FOR WASHING CURVED SHEETS

Robert G. Revells, and John N. Eggert, both of Toledo, Ohio, assignors to Libbey-Owens-Ford Company, Toledo, Ohio

Filed May 1, 1981, Ser. No. 259,683

Int. Cl.³ A46B *13/02*

U.S. Cl. 15—77 **10 Claims**



1. An apparatus for washing curved glass sheets comprising: a frame, a cluster of brushes mounted on said frame and including at least a pair of opposed rotary brushes above and below the path of movement of a curved glass sheet advanced therebetween, each of said brushes having bent central portions conforming to the shape of the glass sheets being washed, each of said brushes mounted on a composite shaft formed of a fixed, bent inner core member and an outer, flexible rotatable sleeve, and means for rotating said sleeves about said inner core members, respectively.

4,352,222

HINGE

Bernhard Mages, Dornbirn, and Erich Röck, Höchst, both of Austria, assignors to Julius Blum Gesellschaft m. b. H., Höchst, Austria

Filed Feb. 7, 1980, Ser. No. 119,369

Claims priority, application Austria, Feb. 22, 1979, 1361/79; May 3, 1979, 3337/79

Int. Cl.³ E05D *3/06*

U.S. Cl. 16—287 **10 Claims**

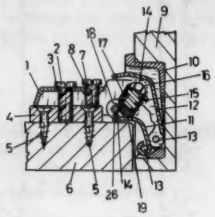
1. A hinge comprising:

a hinge arm adapted to be mounted on an article of furniture, said hinge arm including a pair of hinge axles;

a hinge casing adapted to be mounted on a door of the article of furniture, said hinge casing including a pair of hinge axles;

a pair of hinge links pivotally mounted to said hinge axles of said hinge arm and to said hinge axles of said hinge casing, thereby mounting said hinge casing and the door to be pivotable with respect to said hinge arm and the article of furniture between open and closed positions of said hinge casing and the door;

a bush-like member mounted about a first end thereof for pivotal movement; and



spring means, operating on said member, for urging a second end of said member in directions to primarily abut with one of said hinge links when said hinge casing is in said closed position and to primarily abut one said hinge axle of said one hinge link when said hinge casing is in said open position.

4,352,223

WEB CRUSHING ARRANGEMENT FOR A CARD WEB

Graf Felix, Winterthur; Armin Wirz, Ossingen, and Giancarlo Mondini, Winterthur, all of Switzerland, assignors to Rieter Machine Work, Ltd., Winterthur, Switzerland

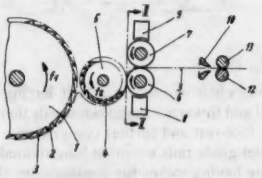
PCT No. PCT/EP79/00062, § 371 Date Apr. 30, 1980, § 102(e) Date Apr. 18, 1980, PCT Pub. No. WO80/00458, PCT Pub. Date Mar. 20, 1980

PCT Filed Aug. 10, 1979, Ser. No. 189,848

Claims priority, application Switzerland, Aug. 31, 1978, 9186/78

Int. Cl.³ D01G *15/96*

U.S. Cl. 19—65 CR **13 Claims**



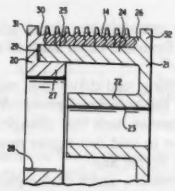
1. Web crushing apparatus for a card web comprising cooperating rolls, a pressing member which is pressable against one roll with facing complementary surfaces on the pressing member and the roll, and means for supplying air under pressure to the facing complementary pressing surfaces on the whole length of the rolls such that due to compressed air supplied, an air film is formed between the pressing member and the one roll, which film transmits the load from the pressing member to the roll and wherein the pressing member is formed by a substantially rigid member which is guided for radial movement with respect to the one roll and which is pressed against the one roll by resilient loading means.

4,352,224

OPENING ROLLER FOR OPEN-END SPINNING APPARATUS

Keith Grimshaw, Todmorden, and Roger C. Spratt, Shipley, both of England, assignors to The English Card Clothing Company Ltd., Huddersfield, England

Filed May 3, 1979, Ser. No. 35,593
Claims priority, application United Kingdom, May 4, 1978, 17648/78
Int. Cl.³ D01G *15/14*
U.S. Cl. 19—97 7 Claims



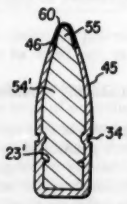
1. An improved card clothed opening roller for use in an open-end spinning apparatus and comprising two roller body parts, each having an inwardly facing abutment and being secured together against axial separation in a closed position, at least one pre-set helical coil of metallic wire type card-clothing located radially on an external cylindrical surface provided by said two roller body parts in the closed position, the end flanks of said coil(s) engaging respectively with said two abutments, the improvement wherein said abutments so constrain said coil(s) axially that adjacent convolutions of said coil(s) are brought into compressive abutting relationship, whereby the axial length of the coil determines the axial length of said roller in the closed position.

4,352,225

JACKETED BULLET AND METHOD OF MANUFACTURE

Charles J. Schreiber, Grand Island, Nebr., assignor to Hornady Manufacturing Company, Grand Island, Nebr.

Division of Ser. No. 934,184, Aug. 16, 1978, Pat. No. 4,336,756. This application Jun. 27, 1980, Ser. No. 163,728
Int. Cl.³ B21K *21/06*
U.S. Cl. 29—1.23 7 Claims



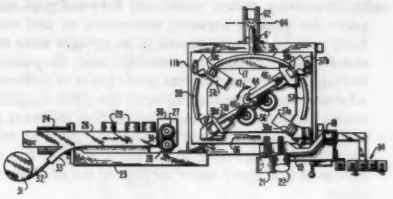
1. A method of making a bullet comprising the steps of:
forming a substantially cylindrical jacket having an internally-extending shoulder between a lower thicker portion and an upper thinner portion;
compressing the lower thicker portion against the upper thinner portion to shape said shoulder into an inwardly-extending annular ring; and
forcing a core downwardly into the jacket, whereby said ring is deformed downwardly and the inside of the jacket underneath said ring and above said ring are filled.

4,352,226

SYSTEM FOR APPLYING AND TENSIONING AN IMPLOSION PROTECTING BAND TO A CRT WITH A TENSION BETWEEN SELECTED LIMITS

Laurence B. Kimbrough, Lititz, and Leonard P. Wilbur, Lancaster, both of Pa., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 24, 1980, Ser. No. 200,539
Int. Cl.³ H01J *9/24*
U.S. Cl. 29—25.19 20 Claims



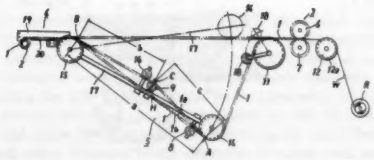
1. A system for applying a tensioning band to an article with a tension between selected limits, comprising: a stationary base and a worktable moveably supported by said base;
a plurality of support means for supporting a article having a generally polygonal cross section on said worktable and for positioning said article in a desired orientation with respect to said worktable, at least a portion of said support means also including means for centering said article with respect to said worktable;
segmented band guide means for guiding said band about said article including a plurality of curved segments having a channel-shaped cross section, said segments being arranged between said support means to guide said band about said article, said guide means also including corner guide segments moveably supported by said support means to guide said band between said curved segments around the corners of said article;
means for feeding said band about said article and for removing slack from said band prior to tensioning said band;
means for applying a known tension to said band, said tension being applied in the same direction as said worktable moves with respect to said base to prevent deflection of said worktable in response to said tension; and
means for holding the free end of said band when said slack is being removed and when said tension is being applied.

4,352,227

APPARATUS FOR PRODUCING A FINNED TUBE FOR HEAT TRANSFER

Masami Ogata; Motoshi Yoshihara, both of Hirakata, and Masahira Tada, Osaka, all of Japan, assignors to Nishiyodo Air Conditioner Co., Ltd., Osaka, Japan

Filed Jul. 14, 1980, Ser. No. 167,873
Claims priority, application Japan, May 20, 1980, 55-67354
Int. Cl.³ B21C *37/26*
U.S. Cl. 29—33 F 7 Claims



1. An apparatus for producing a finned tube suitable for heat transfer which comprises
wire-fin-forming means comprising wire supply means for

supplying a plurality of continuous wires having good thermal conductivity, said supply means including a first grooved roll having a plurality of annular grooves in the periphery thereof for receiving and guiding said wires in side-by-side, parallel relationship, and a pair of meshing gears positioned forwardly of said supply means, said gears receiving and passing said wires therebetween in side-by-side parallel relationship and being effective to shape said wires into upright, wavy wires composed of alternating arch-shaped upper portions and trough-shaped bottom portions as said wires are moved forwardly,

wire-fin-guiding means positioned forwardly of said pair of gears for guiding forward movement of said wavy wires from said fin-forming means in an upright state and in said side-by-side parallel relationship, said fin-guiding means having at least two different guide paths of different lengths wherein the difference between the path lengths is maintained constant, and means for feeding different groups of said wavy wires in said side-by-side parallel relationship through the respective guide paths so that the respective groups of said wavy wires are moved out of phase with each other,

wire-fin-delivery means positioned forwardly of said fin-guiding means for delivering said wavy wires in side-by-side, laterally spaced, parallel relationship with said arch-shaped upper portions being upright, said wire-fin-delivery means including a plurality of guide plates,

tube feeding means for feeding a revolving tube across the forward end of said wire-fin-delivery means in a direction transverse to the direction of forward movement of said wavy wires,

tension control means for applying tension to said wavy wires so that said wavy wires can be helically wound around the surface of said revolving tube with said trough-shaped bottom portions contacting the tube surface and said arch-shaped portions being flexible and upright thereby to form plural helixes having a helix pitch which is the same as the lateral spacing of said wavy wires at the forward end of said wire-fin-delivery means, and

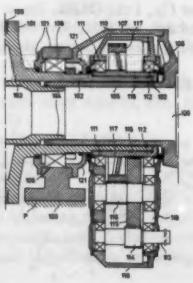
fin welding means for securing said trough-shaped bottom portions of said helically wound wavy wires to the surface of the tube.

4,352,228

APPARATUS FOR ROTATABLY DRIVING A SHELL-TYPE ROLL FOR USE IN A PAPER MAKING MACHINE OR THE LIKE

Kalevi Iso-Aho, Jyväskylä, Finland, assignor to Valmet OY, Finland

Filed Mar. 28, 1980, Ser. No. 135,199
Claims priority, application Finland, Mar. 29, 1979, 791063
Int. Cl.³ B21B *13/02*; B60B *15/16*
U.S. Cl. 29—115 **9 Claims**



1. In mechanical drive apparatus for rotating the cylindrical shell of a roll, such as a suction or deflection-compensated roll utilized in paper machines, wherein an elongate member, such as a tubular shaft in the case of a suction roll or a massive axle in the case of a deflection-compensated roll, extends longitudinally through the interior of said shell, including transmission gears through which rotative power is supplied to the shell from an input shaft thereof, the improvement comprising:

a support member having an annular portion disposed around one end of the elongate member;

unitary bearing means disposed around said annular portion of said support member;

toothed drive gear means rotatably mounted on said unitary bearing means, said drive gear means being situated within a housing;

a set of meshing transmission gears adapted to transmit rotative power from the input shaft to said toothed drive gear means;

means interconnecting said drive gear means and roll shell for transferring the rotational power from the former to the latter in a manner such that changes in position of the roll shell relative to said drive gear means can be accommodated within limits; and

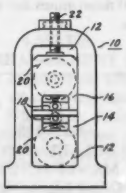
wherein the transmission gears of the gear transmission are disposed within the same housing as said drive gear means and wherein said housing provides support for the elongate member extending through said shell interior.

4,352,229

BEARING RETAINING AND POSITIONING MEANS

Edward A. Moore, Jr., Valparaiso, Ind., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Sep. 18, 1980, Ser. No. 188,415
Int. Cl.³ F16C *35/078*
U.S. Cl. 29—116 R **4 Claims**



1. In combination with a roll having a tapered journal portion and a cylindrical end portion having a diameter less than said tapered journal portion, improved means to retain and position a journal sleeve relative to said tapered journal portion comprising:

(a) a journal sleeve having an inside surface which has a taper about equal to the taper of said tapered journal portion,

(b) an extractor sleeve slidably mounted on said cylindrical end portion,

(c) a circumferential groove in said cylindrical end portion,

(d) a plurality of rollers positioned in said circumferential groove, each roller having its longitudinal axis substantially parallel to the longitudinal axis of said roll and a diameter greater than the depth of said circumferential groove,

(e) a longitudinal groove in said cylindrical end portion extending outwardly from said circumferential groove to allow said rollers and a locking key to be placed in and removed from said circumferential groove,

(f) an extractor body attached to the outer end of said journal sleeve and having an inside surface which is slidably mounted on said extractor sleeve, and

(g) a first hydraulic cavity between said extractor sleeve and said extractor body whereupon supplying hydraulic pressure to said first hydraulic cavity initially forces said extractor sleeve against the ends of said rollers and there-

after causes said extractor body to force said journal sleeve onto said tapered journal portion.

4,352,230

FIBER COVERED ROLLER FOR HIGH TEMPERATURE APPLICATIONS

Robert J. Sukenik, Bloomfield Hills, Mich., assignor to New Hudson Corporation, New Hudson, Mich.

Filed Jan. 11, 1980, Ser. No. 111,219
Int. Cl.[3] B21B *31/08;* B60B *7/04, 11/04*
U.S. Cl. 29—125 6 Claims

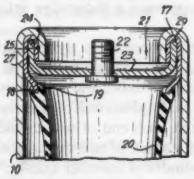
1. A high temperature roller comprising an elongated cylindrical metal mandrel, a series of relatively short monolithic shell sub-assemblies each mounted on said mandrel, each sub-assembly being fabricated of fibers taken from the group comprising aluminum silicate, glass, or mineral wool and a binder, structural spacers inserted between adjacent monolithic sub-assemblies and separating said sub-assemblies whereby transverse bending of said mandrel will be accommodated by relative angular shifting of said sub-assemblies, and means holding said sub-assemblies on said mandrel while accommodating differences in thermal expansion.

4,352,231

METHOD OF FORMING A LOW PRESSURE LOW COST ACCUMULATOR

A. A. Jacobellis, Woodland Hills, Calif., assignor to VSI Corporation, Pasadena, Calif.

Division of Ser. No. 93,041, Nov. 13, 1979, Pat. No. 4,280,533. This application Mar. 30, 1981, Ser. No. 248,858
Int. Cl.[3] B21D *53/00;* B21K *29/00;* B23P *15/26*
U.S. Cl. 29—157 R 3 Claims



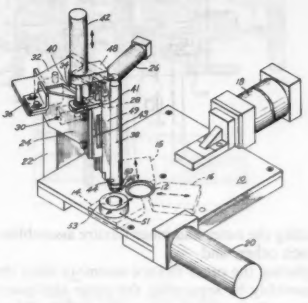
1. The method of manufacturing an accumulator device which comprises the steps of providing a generally cylindrical pressure vessel having a closed end including an oil port and having an open end, providing a bladder subassembly including an axially elongated cylindrical skirt having a bladder bonded to one end thereof, providing a cylindrical cap member having a cylindrical side wall and an end wall having a gas charging valve assembly formed therein, axially inserting said cap member into said skirt with said end wall nearest said bladder, forming an annular weld connection between said side wall of said cap and said skirt at a position axially displaced from the junction of said skirt and bladder while the inner and outer surfaces of said skirt and cap member, at said weld line, are exposed to cooling influences, thereafter inserting said skirt and attached cap into the interior of said pressure vessel, thereafter forming an annular weld connection between said skirt and said vessel at a position intermediate the open end of said vessel and the weld line connecting said cap and said skirt, and thereafter deforming said open end portion of said vessel inwardly into overlapping position of said skirt, dependably to secure said skirt in said pressure vessel.

4,352,232

CLIP LOADING AND FEED DEVICE

Gordon R. Winders, Oak Ridge, Tenn.; Fredric M. MacKay, Raleigh, and Thomas E. Whittlesey, Apex, both of N.C., assignors to Tipper Tie, Inc., Apex, N.C.

Filed Feb. 12, 1981, Ser. No. 233,972
Int. Cl.[3] B23P *11/00*
U.S. Cl. 29—243.56 9 Claims



1. In a clip attachment device for affixing generally circular clips about a mass, said device of the type including a base, an opening in the base for receipt of the mass, a set of clip engaging dies positioned about the opening to engage a clip and movable toward a point in the opening to form the clip about the mass, the improvement of means for positioning an individual clip for gripping by the dies prior to appication of the clip to the mass, said improvement comprising in combination:

(a) a support arm pivotally mounted on the base;

(b) a mandrel for receipt of a plurality of clips, said mandrel attached to the support arm, said arm and mandrel being pivotal between a first position for maintaining the mandrel over the opening and a second position;

(c) means for translating the mandrel toward the opening when said mandrel is in the first position to thereby position a single clip intermediate the dies; and

(d) means for closing the dies on a clip when intermediate the dies, said mandrel being elastically deformable and permitting retention of the clip by the dies upon removal of the mandrel by translation away from the opening, the remaining clips being retained on the expanded mandrel.

4,352,233

LOW COST FLEXURE ASSEMBLY

Walter J. Krupick, Succasana, N.J., assignor to The Singer Company, Little Falls, N.J.

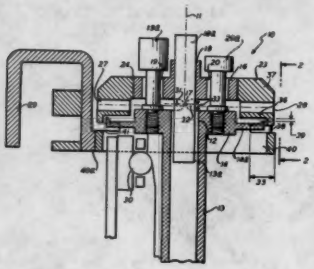
Division of Ser. No. 941,990, Sep. 13, 1978, Pat. No. 4,270,392, which is a continuation of Ser. No. 716,602, Aug. 23, 1976, abandoned. This application Jul. 11, 1980, Ser. No. 168,952
Int. Cl.[3] B23P *15/00;* G01C *19/22*
U.S. Cl. 29—434 2 Claims

1. The method of constructing a two axis assembled flexure assembly unit for a two axis, tuned rotor gyro, said assembled flexure assembly unit having a spin axis and including an outer flexure assembly and an inner flexure assembly coaxially disposed along the spin axis, said outer flexure assembly having a gimbal having only two flexures separated by 180° from each other, said outer flexures being coaxial along an outer flexure axis, said outer flexures being disposed between two outer slots, said inner flexure assembly having a gimbal having only two flexures separated by 180° from each other, said inner flexures being coaxial along an inner flexure axis, said inner flexures being disposed between two inner slots, said outer

flexure axis being separated by 90° from said inner flexure axis, said method comprising:

clamping the gimbal of the outer flexure assembly to the gimbal of the inner flexure assembly against a fixture workpiece;

machining the flexure slots at the same time in both the gimbals of the outer and inner flexure assemblies;



rotating the outer and inner flexure assemblies 90° relative to each other, and

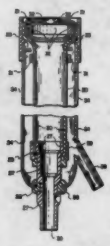
displacing the outer flexure assembly from the inner flexure assembly by separating the outer and inner flexure axis a controlled axial distance along the spin axis to achieve gimbal balance.

4,352,234

METHOD OF MAKING INFLATION FOR TEAT CUP ASSEMBLY

Daniel O. Noorlander, 508 W. 630 South, Orem, Utah 84057

Division of Ser. No. 36,562, May 7, 1979, Pat. No. 4,280,446.
This application Jan. 9, 1981, Ser. No. 223,706
Int. Cl.³ B23P *11/02*
U.S. Cl. 29—450 **14 Claims**



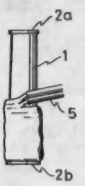
1. A method of making an inflation for use in a teat cup assembly of an automatic milking machine, said method comprising bonding a tubular mouth-forming member made of a resilient, flexible, elastic material to one end of an elongate, tubular, body-forming member which is also made of resilient, flexible, elastic material, said mouth-forming member having a cross-sectional circumference smaller than the cross-sectional circumference of the body-forming member, and then expanding said one end of the elongate, tubular, body-forming member to which the mouth-forming member is attached over the outer circumference of an annular expansion ring which has a circumference substantially greater than the cross-sectional circumference of the elongate, tubular, body-forming member, to hold said one end of the tubular body-forming member in an enlarged circular configuration which has a circumference substantially larger than the cross-sectional circumference of the unexpanded portion of said body-forming member, and to expand the end of the mouth-forming member which is bonded to the tubular body-forming member outwardly toward the perimeter of the expansion ring, with the other end of said mouth-forming member being extended inwardly toward the longitudinal axis of said body-forming member, whereby said mouth-forming member forms a diaphragm having a central opening which has a circumference less than the cross-sectional circumference of the unexpanded portion of said elongate tubular member, with said central opening being positioned adjacent to the enlarged end of said body-forming member and substantially coaxial with the longitudinal axis of said body-forming member.

4,352,235

METHOD OF PRODUCING A DECORATIVE, CYLINDRICAL, COATED ARTICLE

Kazuo Masuda, 52-1, Saiwaicho 4 chome, Tachikawashi, Tokyo, Japan

Filed Sep. 15, 1980, Ser. No. 187,047
Claims priority, application Japan, Dec. 28, 1979, 54-170370
Int. Cl.³ B21B *1/46*
U.S. Cl. 29—527.4 **9 Claims**



1. A method for producing a decorative article, comprising the steps of:

(a) forming flange portions on a cylindrical base member wherein said flange portions are positioned at either end of said cylindrical base member and extend outward from an outer surface of said cylindrical base member to form an outer lip surface at each end of said cylinder;

(b) roughening said surface of said cylindrical base member;

(c) rotating said cylindrical member axially;

(d) applying an epoxy resin colored with a pigment to the surface of said cylindrical base member while rotating, wherein an outer surface of said epoxy extends outward from the surface of the cylindrical base member beyond the outer lip surface of the flange portions, said epoxy coating the entire surface of said cylindrical base member;

(e) heating said colored epoxy resin coating to between 23° C. to 37° C. during said applying step while continuing to rotate said cylindrical base member;

(f) continuing to rotate said cylindrical body member until said colored epoxy resin has stabilized and has returned to room temperature;

(g) heating the resulting coated cylindrical body member to a temperature between 50° C. to 120° C. in order to dry said colored epoxy resin;

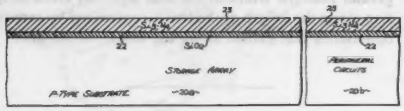
(h) shaving away said outer surface of said colored epoxy resin to the extent that said outer surface of said epoxy resin extends outward from the surface of said cylindrical base member to the same extent as said outer lip surfaces;

(i) polishing the resulting outer surfaces of said lips and said colored epoxy resin.

4,352,236
DOUBLE FIELD OXIDATION PROCESS

John L. McCollum, Portland, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Jul. 24, 1981, Ser. No. 286,578
Int. Cl.³ H01L 21/22
U.S. Cl. 29—571 12 Claims



1. In the fabrication of a metal-oxide-semiconductor memory on a silicon substrate which substrate includes a first area for a storage array and a second area for peripheral circuits, an improved process comprising the steps of:

growing an oxide on said substrate at predetermined first regions of said first area forming first oxide regions and simultaneously growing an oxide at predetermined second regions of said second area forming second oxide regions, said first and second oxide regions being grown to a thickness of approximately 3000 A, or less;

forming polysilicon members on said substrate in at least said first area of said substrate;

growing an oxide on said polysilicon members in said first area while simultaneously thickening said second oxide regions;

whereby a memory is fabricated having thinner oxide regions in the storage array and thicker oxide regions for the peripheral circuits, thereby reducing the area required for the storage array.

4,352,237
METHOD FOR MANUFACTURE OF INTEGRATED SEMICONDUCTOR CIRCUITS, IN PARTICULAR CCD-CIRCUITS, WITH SELF-ADJUSTING, NONOVERLAPPING POLYSILICON ELECTRODES

Dietrich Widmann, Unterhaching, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 16, 1980, Ser. No. 187,773
Claims priority, application Fed. Rep. of Germany, Sep. 28, 1979, 2939456
Int. Cl.³ H01L 21/20, 21/283
U.S. Cl. 29—577 C 1 Claim

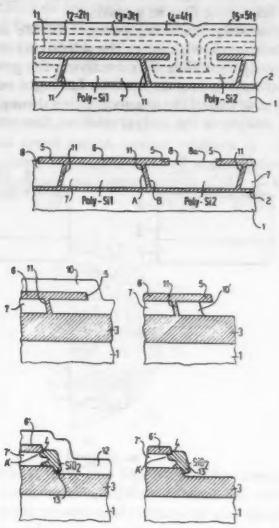
1. In a method for manufacturing self-adjusted nonoverlapping polysilicon electrodes (poly-Si-1 and poly-Si-2) in integrated CCD semiconductor circuits wherein the lateral extent of the electrodes is comparable in magnitude to the layer thickness, and wherein a polysilicon-1-electrode (7) is first formed with a masking layer thereon of SiO_2 or Si_3N_4, said method further comprising:

(a) etching the polysilicon-1-electrodes (7) during the presence of said masking layer (5, 6) of SiO_2 or Si_3N_4 in covering relation thereto,

(b) carrying out the etching of the polysilicon-1-electrodes (7) to such degree that lateral underetching occurs at the edges (5a, 5b) of the masking layer (5, 6) covering the polysilicon-1-electrodes (7) to form overhangs (5) of the masking layer (5, 6) with the overhangs (5) of the masking layer (5, 6) having a prescribed minimum length,

(c) carrying out a thermal oxidation step whereby the edges (A) of the polysilicon-1-electrodes are covered with SiO_2 layers (11), and

(d) applying a second polysilicon layer by means of a chemical vapor deposition step known per se, for producing polysilicon-2-electrodes (8) and carrying out this applying step such that not only are the hollows under the overhangs (5) filled with silicon but also where the edges (5a, 5b) have a spacing of a magnitude comparable to the layer thickness, the interstice between the polysilicon-1-electrodes (7) is also completely filled with silicon; and



(e) eroding the second polysilicon layer by means of an etching step known per se to such degree that the surface of the second polysilicon layer terminates substantially with the surface of the SiO_2 or Si_3N_4 masking layer (6) covering the polysilicon-1-electrodes (7).

4,352,238
PROCESS FOR FABRICATING A VERTICAL STATIC INDUCTION DEVICE

Masafumi Shimbo, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Apr. 14, 1980, Ser. No. 139,754
Claims priority, application Japan, Apr. 17, 1979, 54/46898
Int. Cl.³ H01L 21/225, 29/72
U.S. Cl. 29—579 2 Claims

1. A method of fabricating a vertical static induction-type semiconductor device having main electrode regions, a channel region and a gate region, wherein one of the main electrode regions and the gate region are formed on a surface of the channel region, said method comprising the steps of:

(a) providing a semiconductor substrate having a first conductivity type and a low resistivity, said semiconductor substrate defining a first main electrode region of the vertical static induction-type semiconductor device;

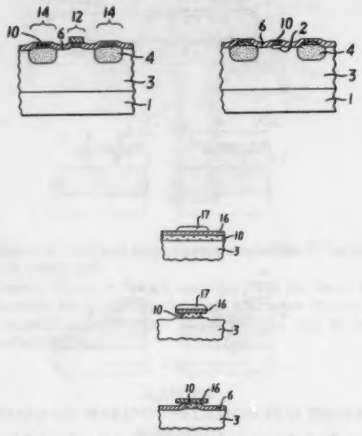
(b) forming a single crystal silicon layer of the first conductivity type and having a high resistivity on a surface of the semiconductor substrate, said single crystal silicon layer defining the channel region of the vertical static induction-type semiconductor device;

(c) depositing a polycrystalline silicon film having a lower impurity concentration that that of the channel region on a major surface of said single crystal silicon layer;

(d) forming an insulating film comprised of silicon nitride on said polycrystalline film;

(e) selectively etching said insulating film for forming islands of the insulating film overlying the portions of the channel region surface at which the gate region and one of the main electrode regions are to be formed;

(f) side-etching said polycrystalline film using the island of said insulating film as a mask to narrow the portions of said polycrystalline film overlying the gate region;
(g) selectively oxidizing the side-etched polycrystalline film and exposed regions of the channel region surface using the insulating film as a mask;
(h) selectively removing portions of the insulating film to form a window through the selectively oxidized oxide on the polycrystalline film overlying the gate region;
(i) introducing impurity atoms having a conductivity type opposite that of the channel region through the window in the oxide on the polycrystalline film and into the gate



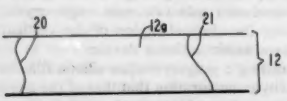
region, the impurity atoms being effective to impart to the gate region a conductivity type opposite that of the channel region, the impurity atoms penetrating the polycrystalline film as they are introduced into the gate region, and the penetration of the polycrystalline film being carried out under conditions effective to oxidize the polycrystalline film; and
(j) forming one of the main electrode regions at the surface of the channel region by removing a portion of the insulating film and introducing impurity atoms of the first conductivity type through the polycrystalline film into the surface region of the channel region where the main electrode region is to be formed.

4,352,239

PROCESS FOR SUPPRESSING ELECTROMIGRATION IN CONDUCTING LINES FORMED ON INTEGRATED CIRCUITS BY CONTROL OF CRYSTALLINE BOUNDARY ORIENTATION

John M. Pierce, Palo Alto, Calif., assignor to Fairchild Camera and Instrument, Mountain View, Calif.

Filed Apr. 17, 1980, Ser. No. 141,040
Int. Cl.³ H01L *21/477*
U.S. Cl. 29—590 **2 Claims**



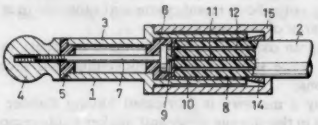
1. A method for fabricating a polycrystalline interconnection on a semiconductor structure, which interconnection resists electromigration, the method comprising the steps of:
(a) forming a polycrystalline interconnection on the semiconductor structure by depositing a line of aluminum to create a line having grain boundaries extending both along the length of the line and across the width of the line, and
(b) reorienting the grain boundaries of the interconnection to extend only across the width of the line by heating the interconnection at approximately 480° C. for approximately 50 minutes in order to expand the grains to a width greater than the width of the line, whereby electromigration along the length of the line is suppressed by removing boundaries that extend along the length of the line.

4,352,240

METHOD OF CONNECTING A COAXIAL CABLE TO AN ELECTRICAL CONNECTOR

Hitoshi Komada, 28-3, Oaza Saito Aza Shimoiseji Fuso-cho, Niwa-gun, Aichi-ken, Japan

Continuation-in-part of Ser. No. 41,298, May 22, 1979, abandoned. This application Jul. 24, 1980, Ser. No. 171,954
Claims priority, application Japan, Jun. 13, 1978, 53-71657
Int. Cl.³ H01R *43/00*
U.S. Cl. 29—854 **1 Claim**



1. A method of electrically and mechanically connecting a coaxial cable having a central positive conductor and a circumferential ground shield radially spaced and insulated therefrom to an electrical connector having an axial bore for receiving said coaxial cable, a projecting positive terminal axially provided in the center and a plurality of ground terminals projecting axially opposite said positive terminal and spaced radially therefrom in conformity with radiuses of a plurality of concentric ground conductors in the cable of various standards of cable, said positive terminal and said ground terminals being insulated from each other, said method comprising the steps of:
severing an end of said coaxial cable smoothly normal to the longitudinal axis thereof exposing only the end faces of said terminal and ground conductors;
axially moving said severed end of said coaxial cable into contact with said electrical connector;
connecting said positive terminal and said ground terminals of said wiring appliance axially with the central and ground conductors respectively exposed on said severed end of said coaxial cable;
and securing said coaxial cable to said electrical connector.

4,352,241

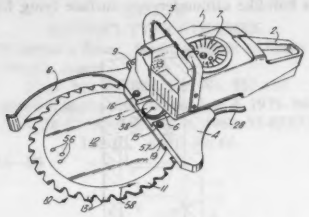
DEVICE RELATING TO A CIRCULAR SAW BLADE OF CENTERLESS TYPE

Mats A. Johansson, Ekliden 6, S-667 00, Forshaga, Sweden

Filed Feb. 27, 1981, Ser. No. 238,824
Claims priority, application Sweden, Mar. 25, 1980, 8002265; Oct. 14, 1980, 8007185
Int. Cl.³ B27B *5/14*
U.S. Cl. 30—123.4 **10 Claims**

1. Device relating to a circular saw blade of centreless type with a sawing depth greater than the radius of the circle, comprising an annular blade and at least one central disc pro-

vided inside the annular blade, characterized in that said central disc contains at least one conduit or passage for a fluid, e.g.



for a coolant or a flushing agent to the part of the disc which lies within the region of the maximum sawing depth.

4,352,242

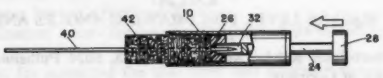
APPARATUS FOR PRODUCING A SKEWERED STACK OF FOOD

Catherine Plet, 945 Cordova St., San Diego, Calif. 92107

Continuation of Ser. No. 126,976, Mar. 3, 1980, abandoned. This application Jun. 15, 1981, Ser. No. 273,585

Int. Cl.³ B26B *27/00*

U.S. Cl. 30—130 **1 Claim**



1. A gourmet press for producing skewered stacks of food morsels, comprising:

an elongated hand-held tube,

the first end of said tube having an internally bevelled cutting edge for cutting food morsels and facilitating the entry of the cut morsels into the tube,

a removable plug mountable in the second end of said tube,

a shaft retained by and axially slideable through said plug, and having its first end insertable into said tube,

a plunger fixed on the first end of said shaft and slideable within said tube,

said plunger and shaft being houseable within said tube and plug when said shaft is fully inserted into said tube,

said plunger having a central opening therein,

the first end of said shaft having a skewer receiving socket axially aligned with said plunger opening,

said plunger opening and socket defining a passage for receiving the end of a skewer inserted through the first end of said tube,

a finger engageable knob fixed on the second end of said shaft, and

said plug, shaft, plunger and knob comprising a plunger assembly which is removable from said tube to facilitate the cleaning of said press.

4,352,243

APPARATUS FOR CUTTING VEGETATION

Marco H. Lombard, Austin, Tex., assignor to Emerson Electric Co., St. Louis, Mo.

Continuation of Ser. No. 132,382, Mar. 21, 1980, abandoned. This application Mar. 19, 1981, Ser. No. 245,458

Int. Cl.³ A01D *50/00*

U.S. Cl. 30—276 **20 Claims**

17. An apparatus for cutting vegetation, comprising:

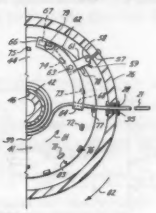
(a) a head rotatable about an axis of rotation and said head having at least one peripheral aperture;

(b) said head carrying a cavity providing a storage area for cutting line;

(c) spool means mounted in said cavity and journaled therein for rotation about the rotational axis of said head and carry a plurality of angularly disposed escapement teeth;

(d) a supply of flexible non-metallic cutting line disposed in a coiled portion about said spool means with one end secured thereto and with a free end extending outwardly from said head through said aperture into a cutting plane;

(e) an escapement lever carrying an anchor for selectively engaging said escapement teeth and in a first position securing said spool means against rotation in said head when said cutting line at said free end in said cutting plane has a predetermined maximum length;



(f) said escapement lever in a second position stepping said anchor between said escapement teeth on said spool means to permit incremental rotation of said spool means for uncoiling said cutting line for extension from said head through said aperture into the cutting plane; and,

(g) toggle pivot means including a lever cam mounted on said head and connected to said escapement lever, said lever cam being actuated by centrifugal force for shifting said escapement lever to said second position from said first position during head rotation whenever said cutting line is shortened to less than the predetermined maximum length, whereby said cutting line is extended in length during the cutting of vegetation.

4,352,244

STRAIGHTLY EXTENSIBLE MEASURING TAPE

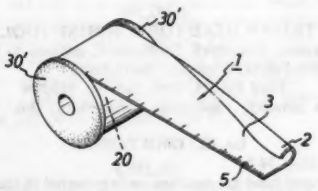
Yasushi Tomuro, No. 11-3, Tamagawa Denencho-fu 2-Chome, Setagaya-ku, Tokyo, Japan

Filed May 19, 1980, Ser. No. 151,106

Claims priority, application Japan, Jun. 15, 1979, 54-74600

Int. Cl.³ G01B *3/10*

U.S. Cl. 33—137 R **4 Claims**



1. A straightly extensible measuring tape, comprising an elongated element to effect measuring, said element being adapted to be extended from a flattened wound position to an extended position so that the element maintains a straight extension, said element upon being extended from its wound position forming along the extended position a cross-sectional shape having a flattened portion and a curved portion contiguous with said flattened portion, throughout the entire extended length, said curved portion being continuously formed during

the extending of the tape without a need to apply a curve-forming force thereto and being flattened when the element is retracted to said wound position and said curved portion forming an arc of at least 180°.

4,352,245

DISTANCE INDICATING DEVICES

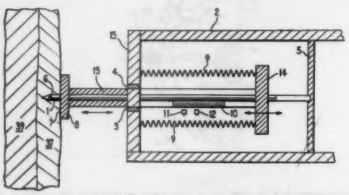
John B. Hennessy, Aburoa, North Auckland, and Rodney J. Twizell, Auckland, both of New Zealand, assignors to John B. Hennessy, North Auckland and The Development Finance Corporation of New Zealand, Wellington, both of, New Zealand

Filed Oct. 24, 1980, Ser. No. 200,338

Claims priority, application New Zealand, Oct. 30, 1979, 190605

Int. Cl.³ G01B *5/02, 11/06*

U.S. Cl. 33—169 B **3 Claims**



1. A distance measuring device comprising:

a probe;

a first reference point associated with said probe;

a second reference point movable relative to said probe;

a light source associated with said probe;

light sensitive element means, associated with said probe, for receiving light from said source reflected from the surroundings of said probe and for generating an electrical signal representative of the level of said reflected light;

a first storage means for storing a first signal representative of the maximum reflected light received by said light sensitive element means;

second storage means for storing a second signal indicative of the light received by said light sensitive element means representative of the minimum level of reflected light;

selection means for selecting a signal level between said stored first and second signals; and

measuring means for measuring the distance between said first and second reference points when said electrical signal from said light sensitive element means reaches the level of said selected signal.

4,352,246

TRACER HEAD FOR MACHINE TOOLS

Ulrich Hauert, Schnottwil, Switzerland, assignor to ETA A.G. Ebauches-Fabrik, Grenchen, Switzerland

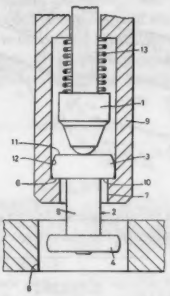
Filed Jul. 15, 1980, Ser. No. 169,094

Claims priority, application Switzerland, Jul. 17, 1979, 6644/79

Int. Cl.³ G01B *7/00, 7/28*

U.S. Cl. 33—174 L **2 Claims**

1. A tracer head for machine tools mounted in the Z-axis of a measuring machine comprising a cylindrical casing, an axially movable tracer placed in said casing and movable against the action of a coil and a radially movable tracer which is separate from said axially movable tracer, the longitudinal axis of said radially movable tracer lying in the Z-axis when the radially movable tracer is in its inoperative position, said radially movable tracer further comprising a ball head having the form of a ball zone, a feeler disc to be pressed against a workpiece to be measured or a template to be contacted and a stem connecting said ball head with said feeler disc, said stem passing with a certain amount of play through a bore provided in the bottom of said casing, said ball head having a lower flat surface resting on the bottom surface of said casing, an upper flat surface forming a contact surface with said axially movable tracer and a ball-like circumference surface lying free from



play on the inside wall of said casing, wherein the axially movable tracer contacts the upper flat surface of the ball head of the radially movable tracer only in one point lying always in the Z-axis.

4,352,247

SQUARE LEVEL FOR DRAWING ANGLES AND PARALLELS

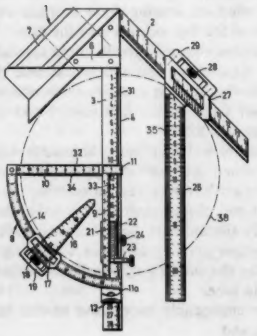
Norbert-Josef Rohde, Am Kleekamp 23, 5024 Pulheim, Fed. Rep. of Germany

Filed Apr. 24, 1980, Ser. No. 143,443

Claims priority, application Fed. Rep. of Germany, May 7, 1979, 2918321

Int. Cl.³ B43L *7/00*

U.S. Cl. 33—428 **8 Claims**



1. A square for drawing angles and parallels, comprising in combination:

two contact arms which are joined at one end and which subtend a right angle;

a center arm attached to the intersection area of the two contact arms and having a longitudinal edge forming the bisector of said right angle;

a protractor frame attached at a right angle to said center arm, said protractor frame including a first frame piece which slides longitudinally along said center arm and a second frame piece perpendicular to the center arm;

a jig plate attached to said first frame piece and having an abutment perpendicular to the longitudinal edge of the center arm; and

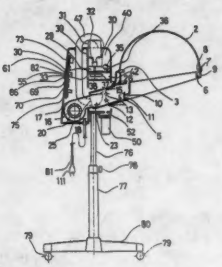
said two frame pieces being connected by an arc-shaped piece which subtends at least a 90° arc.

4,352,248

BONNET TYPE STEAMER

Takehiro Kobayashi, Sakai, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 6, 1980, Ser. No. 157,162
Claims priority, application Japan, Jun. 6, 1979, 54-77332[U]; Aug. 31, 1979, 54-121304[U]; Jan. 8, 1980, 55-855[U]
Int. Cl.³ A45D *20/44*
U.S. Cl. 34—88 16 Claims



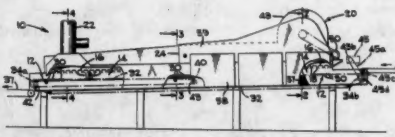
1. A bonnet type steamer comprising:
a bonnet having a fluid passageway;
an atomizer means for generating a mist at room temperature;
means for supplying the mist from said atomizer means to said bonnet through said fluid passageway and
heater means provided in said fluid passageway for heating said mist from said atomizing means to generate steam.

4,352,249

FRUIT DRYER

Boyd W. Rose, Riverside, Calif., assignor to FMC Corporation, Chicago, Ill.

Filed Oct. 9, 1980, Ser. No. 195,466
Int. Cl.³ F26B *15/12*
U.S. Cl. 34—212 9 Claims



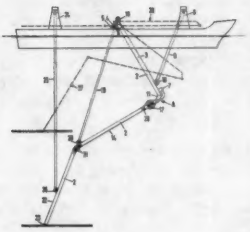
1. A dryer for fruit or the like, comprising:
means defining a drying chamber;
means defining an endless roller conveyor having an upper fruit supporting run extending substantially the full length of said chamber,
said roller conveyor including a plurality of individual rollers mounted in spaced relation to define air passages therebetween and which are free to rotate about their own axes;
means for driving said conveyor;
means defining a plenum chamber disposed longitudinally above the conveyor, said plenum chamber having a plurality of narrow generally rectangular nozzle openings extending transversely substantially the full width of said conveyor for directing a narrow curtain of high velocity heated and pressurized air from each nozzle for quickly evaporating moisture from the fruit;
air fan means for supplying heated air under pressure to the plenum chamber;
means for imparting rotary motion to individual rollers for no more than half of their residence time within the drying chamber, with the major portion of said rotary motion occurring during the latter portion of the residence time therein,
the heated air discharged from said nozzle openings being in the form of narrow curtains of high velocity air which contact the upper exposed surfaces of the fruit and then move through passages between adjacent exposed surfaces of the fruit and the passages between said rollers for quickly evaporating moisture from the fruit in said chamber while the fruit is supported by said rollers,
said rotary motion of the rollers being effective to turn the fruit for exposing all areas of the fruit to be heated by said high velocity air for evaporating substantially all moisture from the fruit prior to moving the fruit out of the drying chamber.

4,352,250

SUCTION DREDGER INSTALLATION

Huibert de Vries, Alblasserdam, Netherlands, assignor to Koninklijke Bos Kalis Westminster Group N.V., Papendrecht, Netherlands

Filed Dec. 3, 1980, Ser. No. 212,744
Claims priority, application Netherlands, Dec. 12, 1979, 7908959
Int. Cl.³ E02F *3/90*
U.S. Cl. 37—58 3 Claims



1. In a dredger installation carried by a floating vessel, a suction pipe comprising first, second and third pipe sections, the first pipe section being supported by and movable with a ladder pivoted at its upper end to the vessel for swinging movement about a horizontal axis which is transverse to the vessel, a pivotal coupling between the first and second pipe sections permitting these sections to enclose a mutual angle between 0° and 180° in lazy tong relationship, means for controlling the position of the second pipe section relative to the first pipe section, said means including a lifting device carried on the ladder adjacent said horizontal axis and an elongated flexible line connected between the lifting device and the second pipe section, and a pivotal connection between the second pipe section and the third pipe section.

4,352,251

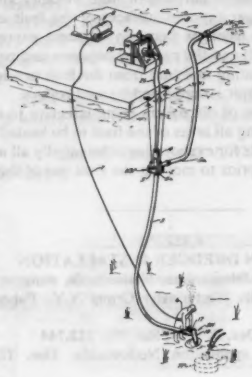
HAND OPERATED SUCTION DREDGE HEAD AND HYDRAULIC SUBMERSIBLE PUMP ASSEMBLY

Albert H. Sloan, 4200 Kean Rd., Fort Lauderdale, Fla. 33314

Filed Jan. 5, 1981, Ser. No. 222,742
Int. Cl.³ E02F *3/88*
U.S. Cl. 37—58 27 Claims

1. A portable, lightweight, hand operated dredge head and for being held by the arms of a diver operator for underwater excavating, comprising, a tubular suction nozzle having a lower inlet end and an open upper end for the entry of water therein, a tubular discharge branch extending from said nozzle

and at a point intermediate the length of said tubular nozzle, said tubular branch having a discharge end for connection to a suction pipe for conveying excavated material away from said head, swivel coupling means between said discharge end of said branch and said suction pipe whereby said head can be rotationally swivelled relative to said suction pipe and quickly detachably connected thereto, and a hand operated valve



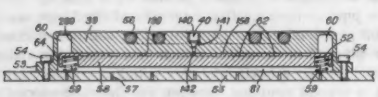
pivotally mounted in said nozzle adjacent its upper end, an operator's handle secured to said valve and extending from said nozzle for permitting the diver operator to move said valve to any adjusted position between a closed position and an open position and for thereby varying the amount of water introduced through said valve and into said nozzle to thereby vary the suction at said lower inlet end of said nozzle.

4,352,252

STEAM GENERATOR WITH DIRECT EVAPORATION

Claude G. Brenot, 36, Chemin de la Cybellerie, Poitiers, France

Filed Jul. 24, 1980, Ser. No. 171,716
Claims priority, application France, Aug. 3, 1979, 79 20025
Int. Cl.³ D06F *71/34*
U.S. Cl. 38—16 **11 Claims**



11. A steam press equipped with a generator with direct evaporation, without accumulation of pressurised steam, comprising:

a press sole,

a first plate fast with the press sole and provided with an inlet channel for a pressurized fluid to be evaporated,

a second plate independent of the first plate and located therebeneath

a steam recovery cavity in communication with a peripheral part of the first and second plates,

a steam chamber located under the second plate immediately above the press sole and communicating with the steam recovery cavity,

elastic return means abutting on the press sole and exerting a pressing action on the second plate to apply the latter against the lower face of the first plate, and

an electric heating resistor located at least approximately in a plane parallel to said first and second plates, wherein the pressurized fluid inlet channel opens out freely from the first plate perpendicularly thereto and to the second plate, into a central part of the generator, and has an outlet diameter greater than about 2.5 mm.

4,352,253

LIVESTOCK IDENTIFICATION SYSTEM

William L. Oswalt, 5316 E. W Ave., Vicksburg, Mich. 49097

Filed Mar. 13, 1981, Ser. No. 243,549
Int. Cl.³ G09F *3/00*
U.S. Cl. 40—300 **11 Claims**

1. An animal marking system for cattle and the like comprising:

a flexible strap having two ends and of a length sufficient to fit around the neck of an animal;

means for adjustably fastening the ends of the strap to form a loop of adjustable diameter to secure the strap around the animal's neck;

at least one pair of first patches bearing identical numbers;

two sets of second patches having a surface of a different identifiable color;

means for removably securing each of the at least one pair of first patches and a pair of second patches to the flexible strap at two separate locations on the strap such that the first and second patches will be positioned on opposite sides of the loop formed by the strap when the loop is positioned around an animal's neck, whereby the first and second patches are both visible from opposite sides of an animal when the strap is positioned on the animal; and

the removably securing means comprises:

a plurality of resiliently deformable hook-shaped elements secured to one of the flexible strap and the first and second patches; and

a plurality of loop elements secured to the other of the flexible strap and the first and second patches, the resiliently deformable, hook-shaped elements internally engaging the loop elements when the hook-shaped elements are pressed against the loop elements.

4,352,254

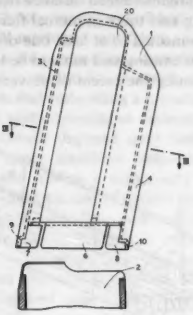
CARTRIDGE PACKAGE FOR RAPID LOADING OF A MAGAZINE OR CLIP FOR AUTOMATIC AND SEMIAUTOMATIC WEAPONS

Kurt Peter, Donaustrasse 101/12, A-2344 Maria Enzersdorf-/Südstadt, and Gerhard Muck, Peter Jordanstrasse 159, A-1180 Wien, both of Austria

Filed May 27, 1980, Ser. No. 153,828
Int. Cl.³ F42B *39/06*
U.S. Cl. 42—88 **5 Claims**

1. A reloading package for the rapid feed of a stack of cartridges into a magazine of an automatic or semiautomatic weapon, said package comprising a generally U-shaped frame formed with an open end and having a pair of mutually parallel shanks having inwardly open guide channels for guiding opposite ends of the cartridges of said stack toward said open end, said shanks being spaced apart to define a window affording access to said stack whereby said cartridges can be fed into said magazine, said open end of said frame being formed with a funnel-shaped mouth adapted to receive an end of said maga-

zine, said mouth being asymmetrical with respect to a median plane through said frame parallel to the plane thereof whereby



the mouths of a plurality of similar packages can interfit upon a stacking thereof.

4,352,255

GROUP USE TOY STRUCTURAL CONSTRUCTION SET

Norwood R. Warehime, 704 W. 34th St., Baltimore, Md. 21211

Filed Dec. 4, 1980, Ser. No. 212,832
Int. Cl.³ A63H *33/10*
U.S. Cl. 46—16 **6 Claims**

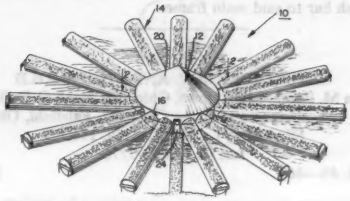
1. Group use toy structural construction set comprising:
a. straight tubes, each having a tubular member body of resilient plastic, each of said tubes having at each end portion at least one saw-cut type slot through its wall parallel to the longitudinal axis thereof;
b. circular hoops, each having a tubular member body of resilient plastic, with the outside diameter of said tubular member body of said hoops being the same as that of said tubular member body of said tubes;
c. tubular member body-to-tube end connector means including C-shaped means for releasable external engagement with the tubular member body of one of said tubes or of one of said hoops and insertable means for releasable internal engagement with an end of one of said tubes;
d. tubular member body-to-tubular member body connector means including two C-shaped means for releasable external interengagement of said tubular member bodies of two of said tubes, two of said hoops, or one of said tubes and one of said hoops;
e. tube end-to-tube end connector means including at least two insertable means for releasable internal interengagement of of ends of a plurality of said tubes, with said interengagement occurring at a common junction point;
f. a wheel hub block having a plurality of equally spaced spoke holes disposed radially around the periphery of said hub block and with the axes of said spoke holes being in a common plane, said spoke holes having a depth and diameter sufficient to receive and frictionally hold said slotted ends of said tubes, said hub block also having an axle hole passing through its center and normal to said plane of said axes of said spoke holes, the diameter of said axle hole being slightly more than the outside diameter of said tubes, whereby said axle hole can pass one of said tubes as an axle so as to permit said hub block to be free to revolve around one of said tubes.

4,352,256

GREENHOUSE STRUCTURE

Dale P. Kranz, 1305 Third Ave., S., Great Falls, Mont. 59405

Filed Feb. 27, 1981, Ser. No. 238,709
Int. Cl.³ A01G *9/14*
U.S. Cl. 47—17 **10 Claims**



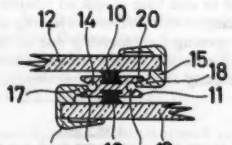
1. A greenhouse structure comprising:
a central hub;
a stationary foundation located within said hub;
an upstanding stanchion mounted on said foundation;
a planar floor rotatably mounted on said stanchion;
a workbench mounted on said floor;
a plurality of stationary elongate greenhouse growth chambers connected to said hub, said growth chambers radiating outwardly from said central hub and being adapted for plant care and storage;
a plurality of rails in each growth chamber;
a plurality of trays supportable on said rails, each of said trays having coupling means thereon for releasably coupling said each tray to an adjacent tray;
means for rotating said floor with respect to said foundation so that said workbench can be aligned with rails in each growth chamber;
means for moving a tray to and from said workbench; and
overhead hoist means for lifting trays from said workbench.

4,352,257

SLIDING WINDOW FOR VEHICLES

Shunichi Nakamura, Anjo, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Aichi, Japan

Filed Jan. 29, 1980, Ser. No. 116,416
Claims priority, application Japan, Feb. 8, 1979, 54-13963
Int. Cl.³ E06B *3/32*
U.S. Cl. 49—406 **3 Claims**



1. A sliding window arrangement comprising two overlapping sliding windows adapted to be guided for movement in a main frame, a sash bar disposed between the overlapping portions of the two windows and extending parallel to the edges of the overlapping window portions, weather-strip means on opposite side surfaces of said sash bar in engagement with said windows and edge frame means secured to the edges of each

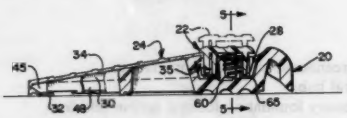
overlapping window portion, said edge frame means and said sash bar having complimentary beveled engaging means for firmly holding each window against said weather-strip means when said windows are in the closed position, said complimentary beveled engaging means being comprised of two oppositely extending pairs of spaced projections on said sash bar and a projecting leg on said edge frame means on each window adapted to engage a respective projection on said sash bar, said space between each pair of projections defining a pair of apertures extending the entire length of the sash bar to provide holes at opposite ends thereof for receiving screws for securing said sash bar to said main frame.

4,352,258

ADJUSTABLE SILL AND THRESHOLD

William M. Bursk, Middletown, Ohio, and Jacob G. Doll, Batesville, Ind., assignors to Pease Company, Fairfield, Ohio

Filed Aug. 4, 1980, Ser. No. 174,761
Int. Cl.³ E06B *1/70*
U.S. Cl. 49—468 **1 Claim**



1. In an adjustable sill and threshold assembly for a door in which a stationary sill base is provided with a longitudinally upwardly opening groove therein and in which a threshold is received in the groove and adapted for adjustable vertical movement therein, the improvement comprising:

said threshold being formed of a yieldable plastic material having a cap portion;

a plurality of generally vertically extending longitudinally spaced adjusting screws, means in said threshold rotatably capturing each of said screws in depending relation therefrom, and including a pair of opposed inwardly facing semi-circular ledges defining with said cap portion a shoulder-receiving clearance space proportioned to receive the head of one of said screws, the minimum transverse space between said ledges being somewhat less than the diameter of said head, said ledges being formed with curved opposed tapered surfaces which decrease in diameter toward said recess to accommodate said head and to deflect upon force applied to said screw to receive and capture said head in said clearance space;

each of said screws having means engageable with said threshold for supporting said threshold thereon,

means in said threshold defining apertures for driver-access to said screws, and

a plurality of sheet metal channel-shaped screw retainer nuts received in said base in spaced relation corresponding to the spacing of said screws and having means therein defining an opening for receiving one of said screws therein, whereby rotation of said screws through said aperture causes raising and lowering movement of said threshold.

4,352,259

MOVABLE INFLATABLE CEILING OR PARTITION FOR GREENHOUSE USE

Richard W. Smith, Rumson, and Robert H. Frank, Freehold, both of N.J., assignors to X. S. Smith, Inc., Red Bank, N.J.

Filed Mar. 24, 1980, Ser. No. 133,390
Int. Cl.³ E04B *1/34*
U.S. Cl. 52—2 **16 Claims**

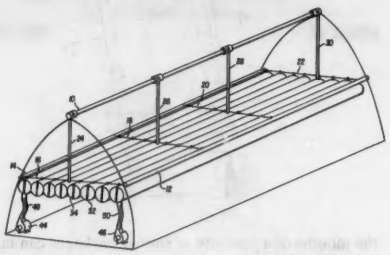
1. Apparatus for reducing the interior volume of a structure, comprising:

a plurality of flexible inflatable tubes movably arranged within the structure;

a plurality of rigid tubular jumper means each having a central through passage affixed in holes formed in the longitudinal side walls of adjacent ones of said plurality of tubes and being located a predetermined distance from the ends of said tubes for placing said tubes in mutual fluid communication;

inflation means connected to at least one of said tubes, selectably operable for causing said tubes to be in an inflated state;

means for constraining the extent of movement of said tubes,



both in the inflated state and the deflated state, whereby upon inflation said tubes are constrained to form a substantially planar surface; and

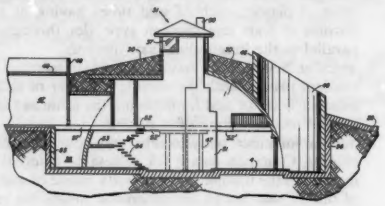
said movement constraining means includes means arranged vertically within the structure for locating said plurality of tubes substantially parallel to the walls of the structure and for constraining the movement of said tubes to be in a substantially vertical plane.

4,352,260

UNDERGROUND HOUSE AND CONSTRUCTION METHOD

Leroy G. Pearcey, 333 W. Dunlap, #236, Phoenix, Ariz. 85021, and Dale A. Pearcey, 3730 S. Mill Ave., #E106, Tempe, Ariz. 85282

Filed Mar. 14, 1980, Ser. No. 130,559
Int. Cl.³ E04B *1/32, 7/08*
U.S. Cl. 52—80 **13 Claims**



1. An underground residential structure comprising:

a. a solid floor slab;

b. a generally dome-shaped outer wall;

c. a plurality of curved arch members for supporting said outer wall, each arch member having an upper end and a lower end;

d. lower attaching means for rigidly attaching the lower ends of said arch members to peripheral portions of said floor slab;

e. upper attaching means for rigid attachment to the upper ends of said arch members to hold said plurality of arch members in a dome-like configuration over said floor slab;

said outer wall including

i. an inner layer of semi-rigid mesh,

ii. a layer of fabric supported by said mesh,

iii. a plurality of reinforcing rods disposed adjacent to the outer surface of said fabric, at least some of said rein-

forcing rods being supported by various ones of said arch members,

iv. connecting means for connecting a plurality of points of said mesh to various ones of said reinforcing rods to support said mesh and said fabric,

v. a layer of solid cementitious material disposed on said fabric, said cementitious material covering said reinforcing rods and embedding a plurality of said reinforcing rods in said cementitious material,

f. a roofed structure disposed over said upper attaching means, said upper attaching means being substantially ring-shaped and having a sufficiently large opening to admit a substantial amount of outside light into said underground residential structure, said roofed structure having window means for allowing said outside light to reach said opening in said upper attaching means;

g. an upper floor disposed above said floor slab, said floor slab being disposed substantially lower than the earth surface generally surrounding said residential structure, an upper portion of said outer wall being above said earth surface, a layer of earthen material being disposed on a major portion of said outer wall to cover said major portion, said major portion extending to said roofed structure; and

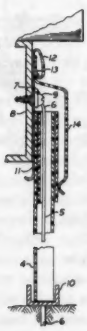
h. a first atrium, said first atrium having a substantially vertical wall, earthen material abutting a lower portion of the outer surface of said vertical wall, an upper portion of said vertical wall extending above the abutting earthen material to prevent entry of any of the abutting earthen material into said first atrium, said vertical wall adjoining said outer wall having a first opening therein for admitting outside light from said first atrium into said residential structure.

4,352,261

SKIRT CONSTRUCTION FOR MOBILE HOME

Louis Wargo, 5255 State Rd., No. 89, Ashtabula, Ohio 44004

Filed Jul. 30, 1980, Ser. No. 173,857
Int. Cl.³ E02D *27/00*
U.S. Cl. 52—169.12 **2 Claims**



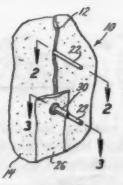
1. Skirt construction for a mobile home having a body supported in spaced relation above the ground, said construction comprising skirt means positioned in the space between the body and the ground, and positioning means engaging said means and extending from the body downwardly and into the ground to prevent lateral displacement of the skirt means, whilst permitting at least limited vertical movement of portions of said skirt means, said skirt means comprising a series of individual panels having interlocking connection with each other to form a continuous skirt, and the positioning means extend within the connection of at least certain of said panels from the body downward and into the ground.

4,352,262

METHOD OF SEALING CRACKS AND APPARATUS THEREFOR

Frank E. Edelmann, 344 N. Park Rd., LaGrange Park, and James R. Post, 147 N. Park Rd., LaGrange, both of Ill. 60525

Filed Aug. 18, 1980, Ser. No. 178,877
Int. Cl.³ E04B *1/41*
U.S. Cl. 52—744 **11 Claims**



1. A method of repairing cracks in structures, particularly of concrete, to prevent leakage and structural deterioration, comprising the steps of:

inserting rods in the crack at spaced intervals therealong, said rods being inserted with one end bound within the crack to support the rod with a portion of the rod extending outwardly from the outer wall surface, the portion of the rod extending from said wall being of sufficient length to support a port member thereover;

applying a surface seal so as to extend partially into the crack near the outer wall surface and to cover the wall surface adjacent the crack and around the rods, so that the surface seal defines a surface barrier for the filler to be injected;

placing port members having hollow shaft portions and a flange portion over said rods with the flange portions near the wall surface and at least partially embedded in said surface seal;

applying surface seal over said port member flanges and onto said previously applied surface seal to embed substantially the entire flange in said surface seal;

allowing said surface seal to cure to define an outer wall surface barrier for the filler to be injected, and removing the rods from the crack and port members, the port members then defining ports communicating with the crack cavity behind the surface seal;

after allowing said surface seal to cure, injecting filler into the port members to fill substantially the entire cavity of the crack behind the surface seal; and

plugging said port member after injecting said filler.

4,352,263

METHOD OF PACKAGING FOWL WITHIN STRETCH BAGS

H. David Andrews, Jr., College Park, Ga., assignor to Star Packaging Corporation, College Park, Ga.

Continuation-in-part of Ser. No. 60,939, Jul. 26, 1979, Pat. No. 4,219,989. This application May 30, 1980, Ser. No. 154,678
Int. Cl.³ B65B *5/04, 39/10*
U.S. Cl. 53—436 **1 Claim**

1. A method of packaging fowl within stretch bags comprising:

A. Inverting a fowl carcass such that the breast is topmost and the legs protrude rearwardly above the tail;

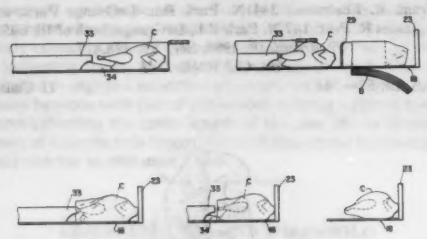
B. Axially advancing by centrally pushing the tail of said carcass in a longitudinal direction;

C. Stretching open an open-ended bag within the path of pushing of the carcass;

D. Engaging and pushing both legs of the carcass, so as to longitudinally advance said carcass into the open-ended bag;

E. Interposing a restraining force in the path of longitudinal advance and at the forward end of said carcass, such that

the leg joints of the carcass are broken and the legs are made to conform to the body of the carcass; and



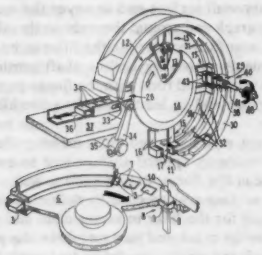
F. Again centrally pushing said carcass, so as to retain said carcass within said bag, while withdrawing pushing of both legs and stretching of said bag.

4,352,264

MACHINE FOR WRAPPING AND BATCHING PRODUCTS

Enzo Seragnoli, Bologna, Italy, assignor to G. D. Societa per Azioni, Bologna, Italy

Filed Apr. 1, 1980, Ser. No. 136,299
Claims priority, application Italy, May 4, 1979, 3392 A/79
Int. Cl.³ B65B *35/30, 11/28*
U.S. Cl. 53—531 **4 Claims**



1. An improved machine for wrapping, selectively orienting and packaging articles of parallel piped configuration, comprising:

a wrapping wheel, means to intermittently rotate said wheel about an axis from an article entry position through an article overturning position and to an article discharging position seriatim, said wheel carrying a plurality of radially extending article grippers, each of said plurality of grippers being adapted to grasp at the free ends thereof an article together with a sheet of wrapping material;

means for infeeding each said article with it's sheet of wrapping material simultaneously to one of said grippers at said article entry position;

means, disposed along the path taken by said grippers between said entry and overturning positions, for folding said sheet of wrapping material to wrap said article therein;

overturning means for grasping an article brought to said overturning position by said gripper and for rotating by 90° said article at said article overturning position after said grippers are opened and while said grippers are temporarily stopped thereat, and then for causing said grippers to re-grip said now turned by 90° article and for releasing said grasping means;

gripper operating means including either one of a first and a second ring-shaped cams, said first cam comprising means for opening and closing said grippers at said article entry and discharging positions and said second cam comprising part of said overturning means and means for opening and closing said grippers at said article entry, discharging and overturning positions while said grippers are temporarily stopped thereat, said gripper operating means operating in synchronization with the intermittent rotation of said wrapping wheel;

said overturning grasping and rotating means being operative only when said gripper operating means is equipped with said second ring-shaped cam which allows said grippers to operate at said article overturning position as well as at said article entry and discharging positions,

means for pushing said articles which have been transferred to said article discharging position thereby removing said wrapped articles from said grippers while they are stopped temporarily at said article discharging position; and

means, disposed in alignment with the path taken by said pushing means, for guiding a succession of said removed, wrapped articles so that a predetermined number of said articles are secondarily wrapped as a whole into a final package,

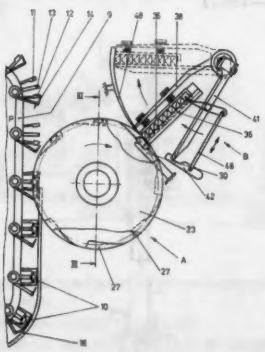
whereby the selection of said first or second ring-shaped cam permits said machine to produce selectively two different types of packages of said wrapped articles, one type of package being characterized by the arrangement of said articles with their major faces facing each other, and the other type characterized by the arrangement with their major faces in line.

4,352,265

APPARATUS FOR PRODUCING BAR PACKAGES OF PREFERABLY INDIVIDUALLY WRAPPED SWEETS OR SIMILAR PIECES OF CONFECTIONERY

Otto Hänsel, Hanover; Hans Lesch, and Hans-Bernd Lesch, both of Germisch-Partenkirchen, all of Fed. Rep. of Germany, assignors to Otto Hänsel GmbH, Hanover, Fed. Rep. of Germany

Filed Oct. 15, 1979, Ser. No. 84,807
Int. Cl.³ B65B *35/52*
U.S. Cl. 53—541 **7 Claims**



1. Apparatus for producing bar-shaped packages from preferably individually wrapped pieces of candy or similar confections, comprising: a continuously revolving packing head; candy pickups and wrapping-material folders mounted on said continuously revolving packing head for wrapping said candy pieces; feeder means for supplying said candy grippers and folders with pieces of candy; transfer means and stacker means, said transfer means transferring pieces of candy from said pickups to said stacker means; stack packaging means for wrapping stacks of candy formed in the stacker means in an outer wrapping; said transfer means having two disks rotating constantly on a common axis, said disks having outward-opening recesses on the periphery of their facing sides, said recesses

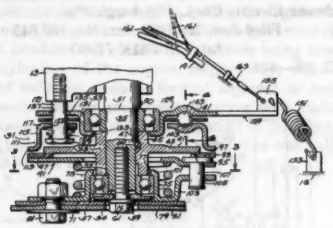
being as deep radially as a piece of candy is thick, said recesses comprising holding chambers for the candy, each chamber comprising radial walls formed by said disks and extending parallel to the direction of rotation and a chamber bottom merging gradually into the periphery of the disk in a direction opposite to the direction of rotation of the disk; spring means for pressing said disks against each other axially so that said holding chambers grasp pieces of candy between them and move them to said stacker means; stationary stop means located near said stacker means and between said disks for transferring a piece of candy, as it is carried along in a chamber revolving between the disks, radially, outwardly along the sloping bottom of the diameter into said stacker means; so that a plurality of individually wrapped pieces of candy are positioned in a stack in sequence along the longitudinal axis of the bar-shaped package and wrapped together in one package with an outer wrapping.

4,352,266

LAWN MOWER BRAKE AND CLUTCH DEVICE

Ronald B. Lloyd, Gilson, and Gerald H. Wick, Galesburg, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Mar. 25, 1981, Ser. No. 247,403
Int. Cl.³ A01D *69/10*
U.S. Cl. 56—11.3 **2 Claims**



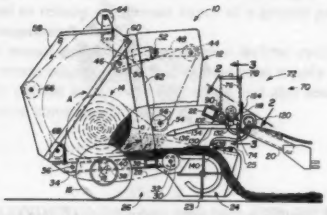
1. A rotary lawn mower comprising a blade housing supported for travel over the ground, a prime mover mounted on said blade housing, a cutter blade, and a combined clutch and brake located between said prime mover and said cutter blade and comprising a drive assembly including a driving member driven by said prime mover for rotation about an axis, and a driving disk fixedly extending on said driving member for common rotation therewith and against axial movement therebetween, a driven assembly connected to said cutter blade, means mounting said driven assembly from said drive assembly for relative rotation therebetween and against axial movement therebetween, a ring member located in encircling relation to said driving member between said disk and said driven assembly and including a friction surface having a radially inner portion in facing relation to said disk and a radially outer portion having an outer perifery, means biasing said ring axially towards said disk for driving engagement by said disk with said inner portion of said friction surface, brake means fixed against rotary movement and movable axially between a retracted position and a braking position engaged with said outer portion of said friction surface so as to disengage said ring from said disk against the action of said biasing means and so as to prevent rotation of said ring, one or more studs extending from said ring in parallel relation to the rotary axis in the direction away from said disk, and in radially outward relation from said biasing means and in radial inward relation from said outer perifery of said ring member, and a corresponding one or more fingers extending fixedly from said driven assembly and including apertures receiving said studs to afford common rotary movement therewith and relative axial movement therebetween.

4,352,267

CHEMICAL DISPENSER FOR A ROUND BALER

Paul B. Mellinger, Willow Street, Pa., assignor to Mellinger Manufacturing Co., Inc., Willow Street, Pa.

Filed Dec. 31, 1980, Ser. No. 221,842
Int. Cl.³ A01D *39/00*
U.S. Cl. 56—341 **9 Claims**



1. An improved dry particulate chemical dispenser for a round baler having a mobile frame adapted to move across a field of crop material, a bale forming chamber carried by said frame and adapted to wrap a continuous mat of crop material about itself in forming a large cylindrical bale, and pick-up means mounted on said frame for gathering crop material from the field and delivering a mat of crop material to said bale forming chamber, said chemical dispenser comprising:

(a) a hopper mounted on said frame for temporary storage of dry particulate chemicals therein, said hopper being rectangular-shaped and formed from contiguous walls including two transversely spaced sidewalls, a front wall, a rear wall, and with the lower portions of the front and rear walls sloping inwardly toward one another for mating with a hollow tube member which is transversely disposed between the lower end portions of said sidewalls in thereby forming the bottom of said hopper;

(b) a pair of transversely spaced inlet openings provided in the upper surface of said tube member and a pair of transversely spaced discharge openings provided in the lower surface of said tube member, respective ones of said upper inlet openings and said lower discharge openings being laterally offset from one another so as to prevent chemicals stored above said upper surface of said tube member from having a straight flow path from said inlet openings down through said discharge openings;

(c) a transverse auger supported for rotation within said hollow tube member, upon rotation of said auger, chemicals which enter into said tube member through said upper inlet openings are conveyed along a portion of said tube member and are discharged out through said lower discharge openings;

(d) a blower having a discharge spout disposed below said hopper and being operable to produce a positive airstream out through said discharge spout, said discharge spout being provided with a pair of receiving openings interconnected and in flow through communication with said discharge openings of said hopper whereby chemicals are dispensed directly from said discharge openings of said hopper into the positive airstream produced by said blower; and

(e) direction means connected to the discharge spout of said blower for channeling the dry particulate chemicals dispersed within said positive airstream rearwardly toward said bale forming chamber for discharge of same in the form of a plume onto the crop material.

4,352,268

HAYMAKING MACHINES

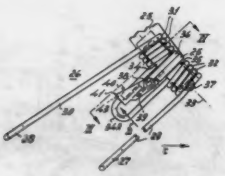
Ary van der Lely, Maasland, and Cornelis J. G. Bom, Rozenburg, both of Netherlands, assignors to C. van der Lely N.V., Maasland, Netherlands

Filed Dec. 19, 1980, Ser. No. 218,099

Claims priority, application Netherlands, Dec. 21, 1979, 7909234

Int. Cl.[3] A01D *79/06*

U.S. Cl. 56—370 14 Claims



1. A haymaking machine comprising a frame and at least one rotatable rake member supported on said frame, said rake member having at least one tine group connected to an outer fastening part of a spoke, said group including at least two tines with respective connecting means and said fastening part being located between the connecting means to support said group, the leading sides of said connecting means and fastening part being relatively smooth with respect to the normal direction of rotation of said member, whereby crop adhesion to the rake member is reduced, said connecting means comprising respective coils for said tines and said spoke extending inwardly towards the rotational axis of said rake member from said coils away from the tine group, means clamping said group to the fastening part, said coils substantially covering the outer portion of the fastening part and protecting the clamping means from fouling crop.

4,352,269

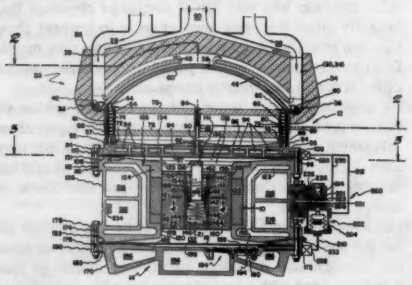
STIRLING ENGINE COMBUSTOR

John J. Dineen, Durham, N.H., assignor to Mechanical Technology Incorporated, Latham, N.Y.

Filed Jul. 25, 1980, Ser. No. 172,372

Int. Cl.[3] F02G *1/04*

U.S. Cl. 60—517 10 Claims



1. A gaseous fuel combustor for a Stirling engine, comprising:

a shell having lower portions adapted to engage a Stirling engine heater head;

air inlet and exhaust ports formed in said shell;

a heat recuperator having inlet and exhaust channels opening at one end communicating with said inlet and exhaust ports;

an annular burner disposed in said shell lower portions and having gas flame apertures facing radially inwardly at the radial extremities of said heater head and communicating with the inlet channel at the other end of said heat recuperator;

a dome-shaped, centrally apertured partition closely spaced from said heater head and forming therewith a first dome-shaped gap;

a dome-shaped insulating cap disposed over said partition and forming therewith a second dome-shaped gap communicating with the first dome-shaped gap through said central aperture of said first dome partition, and with the exhaust channels of said other end of said heat recuperator.

4,352,270

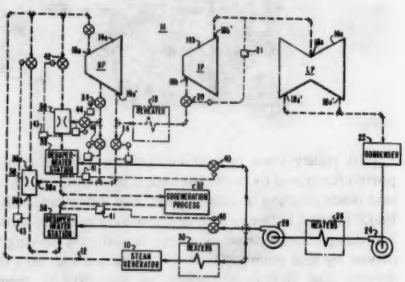
METHOD AND APPARATUS FOR PROVIDING PROCESS STEAM OF DESIRED TEMPERATURE AND PRESSURE

George J. Silvestri, Jr., Upper Chichester, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 26, 1980, Ser. No. 163,043

Int. Cl.[3] F01K *17/00*

U.S. Cl. 60—648 4 Claims



1. A cogeneration system comprising:

a turbine apparatus having a first section and a second section, said first section having an inlet port and exhaust port, said second section having an inlet port;

means for fluidly connecting the first turbine section's exhaust port with the second turbine section's inlet port, said fluid connecting means including means for reheating the steam exhausting from the first turbine section's exhaust port prior to its entry into the second turbine section's inlet port, said fluid connecting means further including means for regulating steam flow through said reheating means;

means for generating steam;

means for transmitting steam from said steam generating means to said first turbine section's inlet port;

means for reducing the pressure of steam extracted from said first turbine section's exhaust port;

means for increasing the pressure of steam extracted from said turbine apparatus;

means for mixing steam extracted from said turbine apparatus with selected water flow rates;

means for utilizing said steam from said mixing means; and

means for fluidly connecting said mixing means and said steam utilizing means.

4,352,271

STEAM FEEDING APPARATUS FOR A MULTICYLINDER STEAM ENGINE

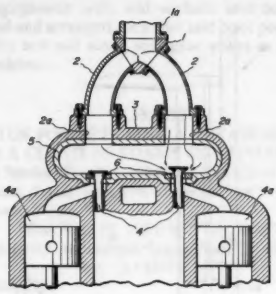
Yuji Hirabayashi, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Dec. 7, 1979, Ser. No. 101,242

Claims priority, application Japan, Dec. 22, 1978, 53-174855[U]

Int. Cl.³ F01K 21/00

U.S. Cl. 60—670 4 Claims



1. A multicylinder steam engine having an engine body for relatively movable connection with a steam generator through steam feed conduits, the steam feed conduits being connected with the cylinders of the engine, respectively, and a steam chamber of sufficient volume formed adjacent to each inlet valve of each cylinder and communicating with each steam feed conduit to suppress pressure pulsation in the conduit, the volume of the steam chamber being more than one half of the total displacement of the cylinders.

4,352,272

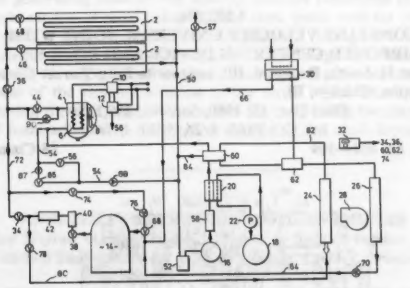
HEAT PUMP SYSTEM

James W. Taplay, 62 Salem Ave., Hamilton, Ontario, Canada (L9A 3W3)

Filed Apr. 3, 1980, Ser. No. 137,036

Int. Cl.³ F25B 27/00, 41/04

U.S. Cl. 62—235.1 8 Claims



1. A heat pump system comprising:

(a) first and second heat exchangers having respective first and second refrigerant receiving spaces and operative in the system heating mode as respective refrigerant evaporators extracting heat from their surroundings with vaporization of liquid refrigerant therein;

(b) a third heat exchanger having a respective third refrigerant receiving space and also operative in the system heating mode as a refrigerant condenser so as to deliver heat to its surroundings;

(c) a refrigerant compressor;

(d) pipe means connecting the said first, second and third exchangers and the compressor to receive vaporized refrigerant from said first and second exchangers and to deliver compressed refrigerant to the third exchanger;

(e) defrost heat supply means for supply of defrost heat to at least the said first exchanger space;

(f) a pressure containment valve between the first exchanger space and the compressor and when operative adapted to maintain the refrigerant vapor in the first space at a pressure and temperature above that at which defrosting will take place, and to release refrigerant vapor at a greater pressure to the compressor; and

(g) control means operative to produce a defrost cycle, said control means actuating the said defrost heat supply means to supply defrost heat to the first space and also rendering the pressure containment valve operative.

4,352,273

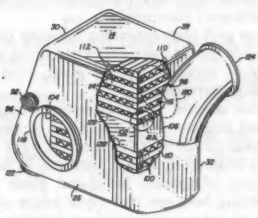
FLUID CONDITIONING APPARATUS AND SYSTEM

Robert C. Kinsell, Los Angeles; Michael P. Saba, Huntington Beach, and James E. Strang, Fountain Valley, all of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed May 22, 1979, Ser. No. 41,451

Int. Cl.³ F25B 9/00; F28F 3/00

U.S. Cl. 62—87 17 Claims



1. Fluid conditioning apparatus defining a fluid flow path for working fluid from a source thereof to a point of use, comprising:

(a) fluid energy conditioning means having fluid inlet means for working fluid and fluid discharge outlet means for conditioned fluid;

(b) fluid supply conduit means coupling said inlet means to a source of working fluid;

(c) heat exchange means comprising heat exchange element means defining first and second fluid passageway means thereof and arranged for heat exchange between the fluids therein;

(d) first duct means coupling one end of said first passageway means to said discharge outlet means of said fluid energy conditioning means;

(e) second duct means coupling the other end of said first passageway means to a point of use for said working fluid;

(f) bypass duct means coupling said one end of said first passageway means to said other end thereof to provide a bypass passageway means around said first passageway means for fluid admitted thereinto at said one end thereof, said bypass duct means disposed intermediate said heat exchange element means to form a part of, and integral with, said heat exchange means; and

(g) heater means disposed adjacent said one end of said first passageway means of said heat exchange element means, said heater means defining tubular passageway means having working fluid inlet means coupled to said fluid supply means.

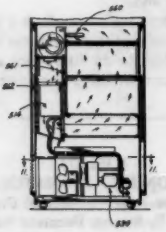
4,352,274
CIRCUIT BOARD MOUNTING AND COOLING ASSEMBLY

Jared A. Anderson, Woodside; Robert V. Van Gelder, Berkeley; Lauren F. Yazolino, Oakland, and Jimmy E. Braun, Orange, all of Calif., assignors to Signetics Corporation, Sunnyvale, Calif.

Division of Ser. No. 894,925, Apr. 10, 1978. This application Jun. 2, 1980, Ser. No. 155,695

Int. Cl.³ F25B *1/00*; F25D *17/04*

U.S. Cl. 62—229 **6 Claims**



1. A card assembly for housing a plurality of removable electronic circuit boards comprising, in combination:

a pair of substantially planar, parallel, vertically oriented, spaced-apart side-panels;

a bottom grill plate extending between the bottom edges of said side panels, said grill plate being shaped to form an array of regularly spaced guide channels separated by cooling apertures;

connector support means extending between the rear edges of said side-panels for mounting a plurality of vertically oriented circuit board connectors, each of said connectors being adapted to engage with one of said cards; and

a plurality of spaced, horizontal guide support members extending between the upper edges of said side-panels, each of said support members defining a plurality of horizontally spaced, forwardly-directed, pointed guide fingers, adjacent pairs of said guide fingers being positioned to horizontally align one of said circuit boards for centering the engagement with one of said connectors.

4,352,275
REMOVABLE DUCT PANEL FOR MULTIBAND OPEN FRONT DISPLAY CASE

Fayez F. Ibrahim, Niles, Mich., assignor to Tyler Refrigeration Corporation, Niles, Mich.

Continuation-in-part of Ser. No. 221,375, Dec. 30, 1980, abandoned, which is a continuation of Ser. No. 76,568, Sep. 18, 1979, abandoned. This application Apr. 28, 1981, Ser. No. 258,326

Int. Cl.³ A47F *3/04*

U.S. Cl. 62—256 **14 Claims**

1. A refrigerated display case comprising:

an outer cabinet having a bottom portion which slopes downwardly to form a drain region for collecting fluid material by gravity flow;

an inner cabinet within said outer cabinet and spaced therefrom, said inner and outer cabinets having aligned access openings to permit access to the display space in the inner cabinet;

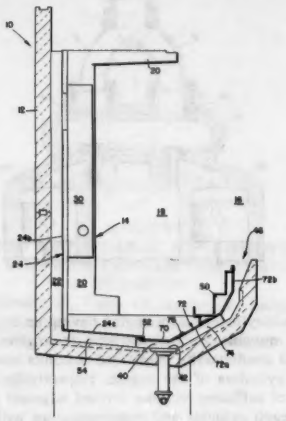
means intermediate said inner and outer cabinets for dividing the space between said cabinets into adjacent first and second conduits, each conduit having respective outlets and inlets on opposite sides of the aligned cabinet access openings, wherein said intermediate means for dividing the space between the inner and outer cabinets comprises a first relatively fixed bottom panel member and a second removable panel member;

air circulating means for propelling air through said first and second conduits between their respective inlets and outlets and across the aligned access openings between the respective conduit outlets and inlets;

means for refrigerating the air flowing through at least one of the first and second conduits;

means at one end region of the first bottom panel member for loosely receiving therein one end portion of the second panel member;

support means located on the underside of the second panel member for supporting said second panel member on the



bottom portion of the outer cabinet in spaced relation thereto;

inlet grill means;

grill support means for loosely supporting said inlet grill means in a position to cover the first and second conduit inlets; and

a removable bottom shelf defining the bottom of the inner cabinet and display space;

said inlet grill means including means for loosely supporting at least a portion of the removable bottom shelf.

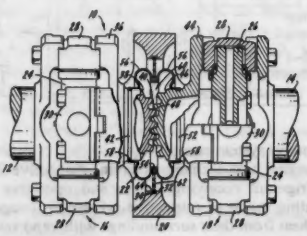
4,352,276
CONSTANT VELOCITY UNIVERSAL JOINT WITH IMPROVED CENTERING DEVICE AND BOOT SEAL

Grant H. Smith, Rockford, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 15, 1980, Ser. No. 216,225

Int. Cl.³ F16D *3/26*, *3/30*, *3/84*

U.S. Cl. 464—109 **8 Claims**



1. A constant velocity universal joint for coupling first and second rotatable shafts, said constant velocity universal joint comprising first and second cardan joints respectively engaged

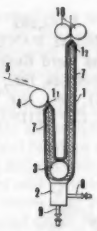
with said first and second shafts, a centering device engaged with said first and second cardan joints, said centering device including first and second gear yokes defining first and second sets of annular gear teeth concentric about the axes of said first and second shafts, said gear teeth being constructed and arranged to mesh in the homokinetic plane, said centering device also including a coupling yoke defining an inwardly facing surface, and a boot seal having a central portion, first and second boot portions in sealing engagement respectively with said first and second gear yokes, and a diaphragm portion secured to said central portion and extending outwardly into sealing engagement with said surface, said boot seal being constructed and arranged such that said boot portions simultaneously flex and roll along said gear yokes as said universal joint articulates.

4,352,277

APPARATUS FOR APPLYING A TREATING SOLUTION TO A CLOTH AS FOAMS CONTINUOUSLY

Yoshikazu Sando; Hiroshi Ishidoshiro, and Eiichi Nakano, all of Wakayama, Japan, assignors to Sando Iron Works Co., Ltd., Wakayama, Japan

Filed Nov. 17, 1980, Ser. No. 207,778
Claims priority, application Japan, Nov. 21, 1979, 54-151085
Int. Cl.³ D06B *3/10*
U.S. Cl. 68—175 **3 Claims**



1. An apparatus for continuously applying a treating solution as foam to a cloth, comprising a U-shaped foam tank for storing foam of a treating solution such as a dye solution, said U-shaped foam tank having a pair of upwardly extending legs and connected at the bottom of a bight section, an apparatus for generating foam of the treating solution connected to the bight section of said U-shaped foam tank, guide rolls for transporting a cloth to be treated continuously through the foam tank first downwardly through one of said legs and then upwardly through the other one of said legs so as to adhere the foam of the treating solution to the cloth while the cloth is passing therethrough, and a means for controlling the amount of foam adhered to the cloth in removing the cloth from the foam tank.

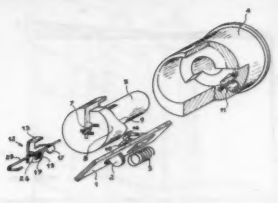
4,352,278

ANTI-THEFT DEVICES ON MOTOR VEHICLES

Guy Neyret, Oullins, France, assignor to Sodex-Magister, Societe d'Exploitation des Brevets Neiman, Croissy, France

Filed Sep. 30, 1980, Ser. No. 192,402
Claims priority, application France, Oct. 12, 1979, 79 25408
Int. Cl.³ B60R *25/02*
U.S. Cl. 70—252 **8 Claims**

1. In an anti-theft device for a motor vehicle, of the type comprising a bolt restored by a spring to the position for locking an element essential to the motion of the vehicle, a lock comprising a stator and a rotor which is actuated by a coded key and which in the course of its rotation causes the bolt to be drawn back into the unlocked position, in opposition to the action of the said spring, and a safety device interacting with the key in order to prevent the bolt from returning to the locked position as long as the key has not been at least partly extracted from the rotor, the provision of a lever serving as said safety device accommodated in the rotor and partly projecting into the key channel of the rotor, the said lever pivoting about an axis perpendicular to the said rotor axis, elastic means for keeping the lever in its two positions, the said lever comprising a boss interacting with the point of the key, a supplementary part interacting with a ramp in order to tilt the lever from the first to the second position under the thrust of the point of the key on the said boss, the said lever also comprising a tooth, accommodated in the key channel in the second position and releasing the said key channel in the first position, the key comprising a through-slot in which the tooth of the said lever is accommodated in its second position.

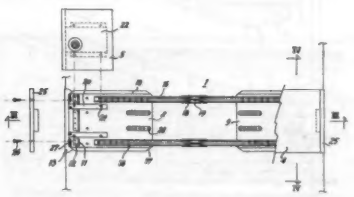


4,352,279

DEVICE FOR MOUNTING CLOSURES ON DOOR PANELS

Gerard G. Parlebas, and Solange Lebars-Parlebas, both of 11 ave. Junot, 14 Hameau des Artistes, 75018 Paris, France

PCT No. PCT/FR79/00082, § 371 Date May 19, 1980, § 102(e) Date May 19, 1980, PCT Pub. No. WO80/00589, PCT Pub. Date Apr. 3, 1980
PCT Filed Sep. 18, 1979, Ser. No. 196,796
Claims priority, application France, Sep. 19, 1978, 78 26780
Int. Cl.³ E05B *9/08*
U.S. Cl. 70—451 **11 Claims**



1. A bracket for mounting a closure on a door, comprising two pairs of rigid platens, a flexible strap bent in U shape and securing together the platens of each pair, traction tightening elements extending from the platens of one pair to the platens of the other pair, means for adjusting the length of the traction tightening elements to draw the pairs of platens toward each other to clamp them securely to a door, means defining slideways on the edges of the platens, and covering bands having portions complementary to said slideways to slide in said slideways to cover the platens and tightening elements.

4,352,280

COMPRESSION FORMING OF SHEET MATERIAL

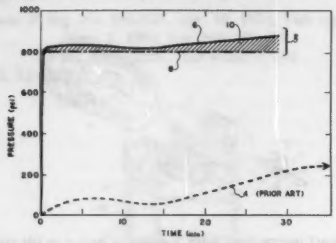
Amit K. Ghosh, Westlake Village, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed May 16, 1980, Ser. No. 150,472
Int. Cl.³ B21B *9/00*
U.S. Cl. 72—38 **12 Claims**

1. A method of compression forming a sheet of material having plastic properties, comprising:

holding said sheet opposite a surface of a die;

applying fluid pressure concurrently to both sides of said sheet to create a compressive stress in said sheet in the through thickness direction which at least equals the stress at which the material begins to flow plastically;



maintaining said pressure higher on one side of said sheet than on the other side so that said sheet bends toward said surface and forms plastically by said compressive stress against the said surface of said die.

4,352,281

METHOD AND APPARATUS FOR BENDING PIPES

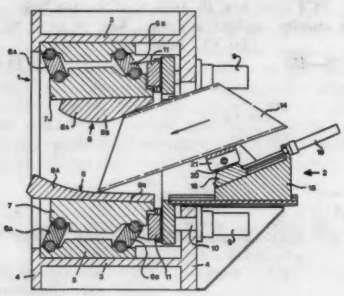
Christian Ragettli, Alstetterstrasse 149, 8048 Zurich, Switzerland

Filed Oct. 28, 1980, Ser. No. 201,590

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1979, 2943960

Int. Cl.³ B21D *7/08, 7/14*

U.S. Cl. 72—131 **8 Claims**



2. Apparatus for bending straight pipe sections into pipe elbows having a predetermined length and angle comprising:

means for measuring the straight pipe sections to make the sections correspond to the predetermined length of a finished elbow;

cutting means to cut the straight pipe ends at an angle to the center axis of the pipe, which angle will determine and assure that a planar face of a flange which is to be fitted to the ends of a finished elbow will be perpendicular to the axis of the tube, the angle being 38.146° for a 90° elbow, 21.440° for a 45° elbow, and less than 21° for less than a 45° elbow;

carriage means for supporting said cut pipe sections and for feeding said sections into a pressing station and into a calibrating station along an inclined plane in a direction of successive mechanical pressing of the pipe in a first pressing stage to an ellipse and in a second pressing stage to a circle cross section;

first deforming means operated by hydraulic piston-cylinder units and levers in said first pressing station where the elliptical cross section is formed;

a plurality of inwardly pressing arcuately shaped segments arranged radially along a circle in equidistant positions with pressing ends of said segments bearing inwardly against said pipe operated by said first deforming means;

a second deforming means;

a calibrating means positioned beyond said first deforming means, the contour of said calibrating means conforming to the final shape of the elbow formed by said second deforming means with respect to roundness and angle;

said second deforming means having a plurality of inwardly pressing elements;

said inwardly pressing elements of said first deforming means being pressed against said pipe at an angle of less than 90° to the center axis of the pipe;

said calibrating means being operated at an angle which is perpendicular to the axis of said pipe whereby the final deformation of said section with respect to the angle and roundness of the elbow is carried out;

the first pressing by said first deforming means being carried out at an angle less than 90° converting said straight pipe into an elliptical shape while said second pressing step after alters said elliptical shape into a round shape; and

said calibrating means holding and supporting one end of said pipe while it is mechanically shaped and calibrated to complete said elbow before the carriage moves to discharge said pipe.

4,352,282

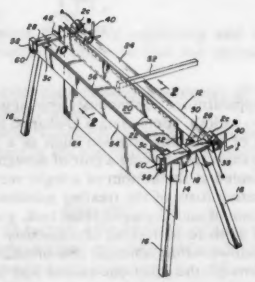
SHEET METAL PANEL BRAKE

Ervin Buske, Gowrie, and Gerd Buske, Onawa, both of Iowa, assignors to Buske Industries, Inc., Gowrie, Iowa

Filed Jan. 21, 1981, Ser. No. 226,945

Int. Cl.³ B21D *5/04*

U.S. Cl. 72—321 **5 Claims**



1. A sheet metal panel brake, comprising:

a frame having laterally spaced opposite ends and front and rear sides,

a first jaw fixed to the frame and extending from end to end on said frame, said first fixed jaw having a straight edge disposed toward the front side of the frame,

a second jaw fixed to the frame and extending from end to end on said frame and spaced toward the front side of the frame from the first fixed jaw, said second fixed jaw having a curved edge spaced from and disposed toward the straight edge of the first fixed jaw,

a movable jaw extending from end to end of said frame and disposed between said edges of the fixed jaws and means for mounting said movable jaw on said frame for forward and rearward reciprocating movement between the fixed jaws said movable jaw having clamping surfaces on opposite sides thereof,

and means for reciprocating said movable jaw forwardly and rearwardly for selectively holding a sheet against either the straight edge of the first fixed jaw or the curved edge of the second fixed jaw by engaging a respective

clamping surface against said straight edge or said curved edge,

a braker bar,

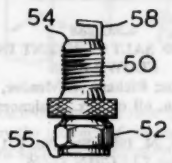
and means for pivotally mounting opposite ends of said braker bar on respectively opposite ends of said frame so that said braker bar can bend a sheet against either the straight edge of the first fixed jaw or the curved edge of the second fixed jaw.

4,352,283

METHOD OF FORMING SPARK PLUG BODIES

Robert J. Bailey, Enfield, England, assignor to Ford Motor Company, Dearborn, Mich.

Filed Mar. 6, 1981, Ser. No. 241,145
Int. Cl.³ B21D *22/00*
U.S. Cl. 72—354 4 Claims



1. A method of cold extruding a spark plug body having a cylindrically shaped central portion, a cylindrically shaped first end portion with a diameter less than said central portion and a hexagonally shaped second end portion with a maximum cross-sectional measurement less than the diameter of said central portion comprising the steps of:

forcing a steel blank into a first cylindrical die to shape said blank into a cylindrical blank of a first diameter and having first and second defined ends;

forcing said first end of said cylindrical blank into a second cylindrical die to form a first cylindrically shaped end portion having a second diameter that is less than said first diameter; and

forcing said second end of said cylindrical blank into a hexagonally shaped die and around a biased mandrel to form a hollow hexagonally shaped portion thereon having a maximum cross-sectional measurement that is less than said first diameter.

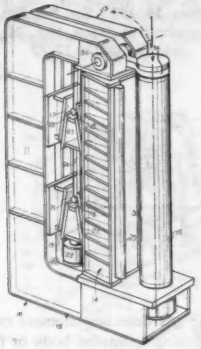
4,352,284

VERTICAL PRESS

Thomas W. Woods, Toronto, Australia, assignor to T. W. Woods Constructions Pty. Limited, Australia

Filed May 28, 1980, Ser. No. 154,084
Int. Cl.³ B21J *9/18*
U.S. Cl. 72—452 2 Claims

1. A vertical press comprising a frame of generally C-shaped configuration having a vertically extending main part and two vertically spaced generally horizontally extending arms, a vertical mandrel extending between said arms in spaced parallel relationship to said main part and being connected to said arms, a movable member parallel to said mandrel extending between said arms and located between said main part and mandrel, said member being movably engaged with said arms so as to be horizontally movable toward said mandrel, power means to move the movable member in a pressing action toward said mandrel, said power means including two pairs of vertically spaced opposing reaction inclined converging surfaces, one of each pair of surfaces being fixed to said main part and the other surface of each pair being fixed to the movable member, the two pairs of surfaces converging in the same direction toward one of said arms of said frame, a movable wedge disposed between each pair of said surfaces and engaging said surfaces slidably to cause displacement of the surfaces fixed to the movable member responsive to simultaneous movement of the wedges in one direction along the axis of taper of the wedges and toward one of said arms, the surfaces of the pairs and opposing coacting surfaces of the wedges arranged to define predetermined equal acute angles and all such surfaces being inclined to the vertical, said power means



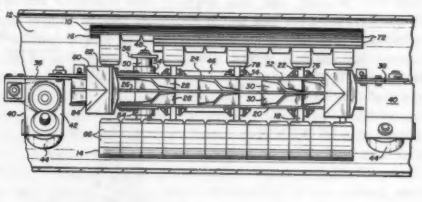
including cylinder means connected between one of said arms and said wedges to move the wedges in unison along their common axis of taper without relative movement, and rigid means between spaced end faces of the wedges assuring their movement in unison under influence of said cylinder means.

4,352,285

HYDRAULIC WEDGE MANDREL

Forrest N. LaRue, Sand Spring, Okla., and Lionel H. Wheeler, Houston, Tex., assignors to Crutcher Resources Corporation, Houston, Tex.

Filed Sep. 6, 1979, Ser. No. 73,022
Int. Cl.³ B21D *9/01*
U.S. Cl. 72—466 15 Claims



1. A mandrel for insertion in a pipe to prevent distortion during bending of said pipe comprising:

(a) top, middle and bottom spring plates normally positioned one above the other in parallel planes;

(b) segment means secured above said top plate and secured below said bottom plate forming upper and lower cylindrical contact surfaces;

(c) driven wedge means on the bottom of said top plate and the top of said bottom plate, said driven wedge means having a wedge surface of decreasing inclination;

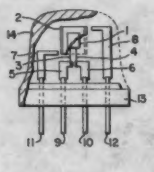
(d) drive wedge means on said middle plate, said drive wedge means having a wedge surface of decreasing inclination and confronting the wedge surfaces of said driven wedge means; and

(e) means to translate said middle plate longitudinally of said top and bottom plates to move said drive wedge means relative to said driven wedge means to engage the confronting wedge surfaces thereby moving said segments into contact with the inner wall of said pipe preparatory to bending the same in the region of contact.

4,352,286
COMBUSTIBLE GAS DETECTING ELEMENT

Yoshihiko Nakatani, Osaka; Masayuki Sakai, Katano; Seiichi Nakatani, Neyagawa, and Michio Matsuoka, Ibaraki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Nov. 19, 1980, Ser. No. 208,478
Claims priority, application Japan, Nov. 24, 1979, 54-152329
Int. Cl.³ G01N *27/12*
U.S. Cl. 73—23 7 Claims

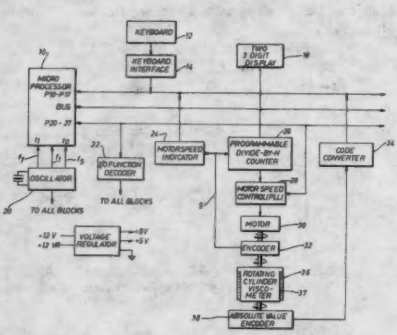


1. A combustible gas detecting element comprising a gas sensing body comprising a sintered body or film of an amorphous semiconductor comprising a metal oxide, a sulfate and halide.

4,352,287
ROTATIONAL VISCOMETER

Heinz W. Orth, and James W. Sloot, both of Calgary, Canada, assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Jun. 23, 1980, Ser. No. 162,137
Int. Cl.³ G01N *11/14*
U.S. Cl. 73—60 32 Claims



1. A rotating-cylinder viscometer for measuring the shear stress at a given shear rate of a fluid contained between a rotatable outer cylinder and a rotatable inner cylinder, the inner cylinder rotating in response to forces produced in the fluid by rotation of the outer cylinder, and where the amount of rotation of the inner cylinder is related to the shear stress of the fluid, the viscometer comprising:

(a) a system clock, for providing system clock signals;

(b) a microprocessor unit responsive to said system clock, for inputing and outputing data signals to select the shear rate of rotation of the outer cylinder and to obtain during measurement intervals a plurality of readings of the amount of angular rotation of the inner cylinder at each selected shear rate;

(c) a shear rate controller responsive to said clock and the shear rate selecting data from said microprocessor, for rotating the outer cylinder at a predetermined constant angular velocity;

(d) a position indicator connected to the inner cylinder for rotation therewith, for indicating the angular position of the inner cylinder;

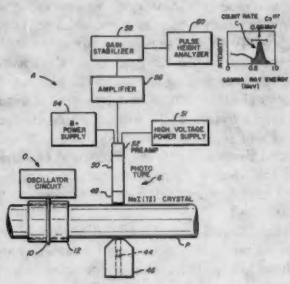
(e) a function selector means connected to said microprocessor, for inputing to said microprocessor the mode of operation for the viscometer, and for inputing the preselected shear rates at which the outer cylinder is to be rotated; and

(f) display means responsive to said microprocessor, for displaying both a measured shear stress and the angular velocity of the outer cylinder at which the displayed shear stress was measured, said microprocessor determining from the average angular readings for the plurality of angular position readings of the inner cylinder for each measurement interval when the steady state shear stress has been reached, the steady state shear stress obtaining when the average angular readings for consecutive measurement intervals differ by no more than a predetermined amount.

4,352,288
MEASUREMENT OF SALT CONTENT IN PETROLEUM FLOW LINES

Hans J. Paap, Houston; Richard A. Meador, Spring, and Dan M. Arnold, Houston, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 24, 1980, Ser. No. 171,766
Int. Cl.³ G01N *33/26*
U.S. Cl. 73—61 R 17 Claims



1. A method for analysis of a fluid flowing in a conduit to determine the salt content of the fluid comprising the steps of:

(a) measuring the conductivity of the fluid;

(b) measuring the density of the fluid;

(c) obtaining a measure of the liquid phase fraction of the fluid based on the density of the fluid; and

(d) obtaining from the conductivity and the liquid phase fraction the concentration of salt in the liquid phase of the fluid.

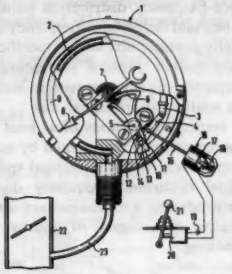
4,352,289
FUEL CONSUMPTION INDICATOR

Bernhard Stier, Kelkheim-Fischbach, and Gerhard Ruschek, Hattersheim, both of Fed. Rep. of Germany, assignors to VDO Adolf Schindling AG, Fed. Rep. of Germany

Filed Dec. 24, 1980, Ser. No. 220,163
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1979, 2952268
Int. Cl.³ G01L *23/24*
U.S. Cl. 73—114 4 Claims

1. Apparatus for the indication of fuel consumption per distance unit of a motor vehicle with an Otto engine and a gearshift mechanism, in which an indication manometer having a tube spring is attached to engine manifold vacuum via a suction pipe for the measurement of the engine manifold vacuum, and is connected, via a pointer mechanism, with a pointer shaft, and with electromagnetically controlled means for influencing the indication in dependence on the gear inserted of the gearshift mechanism, wherein:

the electromagnetically controlled means includes
a coil;
a plunger; and
a key switch connected to control excitation of the coil in dependence on the gear selected; and



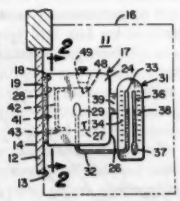
connecting means between the tube spring and pointer shaft adjustable by the plunger of the electromagnetically controlled means such that at the insertion of at least two gear stages, the same scale for the fuel consumption per distance unit applies.

4,352,290

HEAT TRANSFER MEASURING APPARATUS

John J. Neils, Rte. 6, Box 97X, Priest River, Id. 83856

Filed Mar. 20, 1980, Ser. No. 132,280
Int. Cl.[3] G01K *13/00, 3/08*
U.S. Cl. 374—110 15 Claims



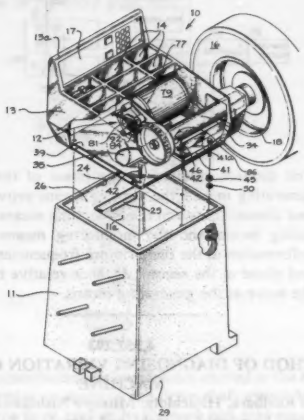
1. A heat transfer measuring and indicating apparatus for a windowpane of a room, said apparatus comprising a body portion having one end adapted to fit against part of the inside surface of such a windowpane, said body portion having wall portions defining an enclosed chamber adjacent such pane and inside such room when said one end is fitted against the pane, said body portion having a construction thermally insulating said chamber from the temperature within such room and providing a chamber temperature responsive to both the actual temperature of such pane and the relative transfer of energy through such pane to and from said chamber, a temperature sensing element positioned within the chamber of said body portion at a location therein spaced inwardly from said one end and from such pane, and a temperature indicator operatively connected to the temperature sensing element and conveniently visible to a nearby user inside such room.

4,352,291

WHEEL BALANCING MACHINE

Donald B. Curchod, Saratoga, and Arthur K. Arnold, San Jose, both of Calif., assignors to Nortron Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 42,144, May 24, 1979, abandoned, which is a continuation of Ser. No. 907,593, May 19, 1978, abandoned. This application Dec. 31, 1980, Ser. No. 221,919
Int. Cl.[3] G01M *1/22*
U.S. Cl. 73—462 20 Claims



1. In a wheel balancing machine comprising a rigid base, an elongate rigid bearing housing, bearing means carried within said housing at axially spaced positions, a drive shaft supported for rotation by said bearing means, one end of said shaft being disposed and adapted to readily removably receive a wheel to be balanced, a drive motor carried by said housing and disposed to move therewith independently of said base, means interposed between said housing and said base at first and second axially spaced positions along said housing serving to confine movement of said housing to a plane substantially parallel to said base, said housing, motor and the last named means all lying substantially entirely within the periphery of the tire projected laterally therefrom coaxially of said bearing housing, the last named means being disposed to be subjected to imbalance forces derived from rotation of an unbalanced wheel on said shaft, said forces acting in said plane and in a plurality of spaced parallel planes disposed substantially parallel to and spaced from a plane of rotation of the wheel, and means carried by the second named said means to generate signals proportional to the imbalance forces acting thereon.

4,352,292

INSTRUMENT FOR MEASURING DYNAMIC VISCOELASTIC PROPERTIES

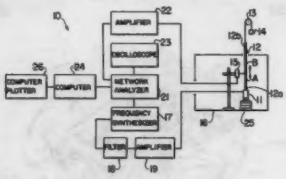
Walter M. Madigosky, and Gilbert F. Lee, both of Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 28, 1980, Ser. No. 172,585
Int. Cl.[3] G01N *29/00*
U.S. Cl. 73—575 19 Claims

1. An instrument for measuring the viscoelastic properties of rubber compounds, comprising:
means generating an extensional acoustic wave in the rubber compound at one or more frequencies;
means monitoring the rubber compound for deformation, said monitoring means being positioned at a first distance from the generating means; and
means varying the distance between the generating means and the monitoring means, said varying means providing a

second distance between the generating means and the monitoring means;

whereby the generating means creates an extensional acoustic wave in the rubber compound which deforms the compound at the one or more frequencies, the monitoring means monitors the deformation of the compound at the one or more frequencies for amplitude and phase at the



first distance relative to the phase of the wave at the generating means, the varying means provides for a second distance between the generating means and the monitoring means and the monitoring means monitors the deformation at the one or more frequencies for amplitude and phase at the second distance relative to the phase of the wave at the generating means.

4,352,293

METHOD OF DIAGNOSING VIBRATION OF ROTARY MACHINE

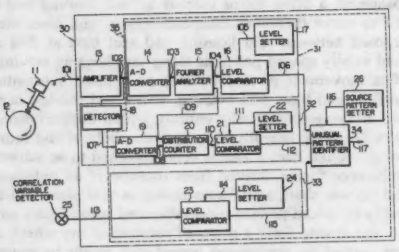
Nobuo Kurihara, Hitachiota; Mitsuyo Nishikawa, Hitachi; Yoshitoshi Nagahashi, Hitachi, and Masafumi Takechi, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 25, 1980, Ser. No. 180,583

Claims priority, application Japan, Aug. 24, 1979, 54-107086

Int. Cl.³ G01N *29/04*

U.S. Cl. 73—593 **10 Claims**



1. A method of diagnosing vibration of a rotary machine for determining unusual vibration thereof, comprising the steps of:

detecting vibration of a rotary shaft of the rotary machine and producing a shaft vibration signal representative thereof;

analyzing said shaft vibration signal and producing a frequency spectrum signal indicative of the level of at least one of predetermined frequency components of said shaft vibration;

providing a spectrum setting signal representing a predetermined level of said frequency component;

comparing said frequency spectrum signal with said spectrum setting signal and producing an unusual spectrum signal indicative of whether said frequency spectrum signal exceeds said spectrum setting signal;

converting said shaft vibration signal into an occurrence-frequency distribution signal representative of a distribution pattern of values measured in a predetermined time interval by time-related analysis of at least one component of the shaft vibration signal;

providing an occurrence-frequency distribution pattern setting signal;

comparing said occurrence-frequency distribution signal with at least one of individual predetermined distribution patterns represented by said occurrence-frequency distribution pattern setting signal and producing an unusual occurrence-frequency distribution pattern signal indicative of when said occurrence-frequency distribution signal substantially corresponds with a specific one of said individual distribution patterns represented by the occurrence-frequency distribution pattern setting signal;

providing a source pattern signal; and

comparing respective portions of at least one of predetermined source patterns represented by said source pattern signal respectively with the unusual spectrum signal and the unusual occurrence-frequency distribution pattern signal for producing a source pattern identification signal representative of a source of unusual vibration of the rotary machine.

4,352,294

OPTICAL SYSTEM FOR SCANNING A PART WITH A BEAM AND ESPECIALLY AN ULTRASONIC OR ELECTROMAGNETIC BEAM

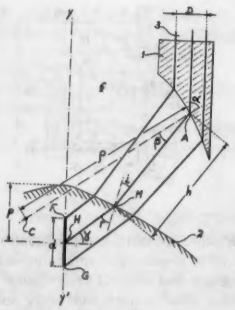
Jean Perodjon, Saint Ismier, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Continuation of Ser. No. 30,866, Apr. 17, 1979, abandoned. This application Sep. 9, 1980, Ser. No. 185,517

Claims priority, application France, Apr. 20, 1978, 78 11670

Int. Cl.³ G01N *29/04*

U.S. Cl. 73—642 **7 Claims**



1. An optical system for scanning a part with a multiplicity of beams, wherein the constructional arrangement and position of the optical system with respect to the part are such that the caustic formed by said system within said part by refraction of the beam is concentrated on an axis at right angles to said part, by means of a lens opposite to said part which is contoured relative to the surface of the part, the angle of incidence of the refracted beams being constant with regard to said axis, the caustic being normal to the entry surface of the beam in the part, at the intersection between the caustic and the entry surface.

4,352,295

INSTANTANEOUS TORQUE DETERMINING APPARATUS

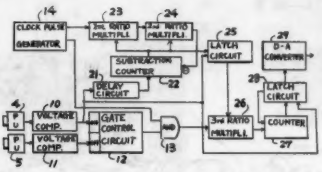
Osamu Machara, and Tooru Sasaki, both of Kawasaki, Japan, assignors to Ono Sokki Co., Ltd., Yaguchi, Japan

Continuation-in-part of Ser. No. 893,037, Apr. 3, 1978, abandoned, which is a continuation-in-part of Ser. No. 755,213, Dec. 29, 1976, abandoned. This application Jun. 14, 1979, Ser. No. 48,493

Claims priority, application Japan, May 22, 1976, 51-59777; May 22, 1976, 51-59778

Int. Cl.³ G01L 3/10

U.S. Cl. 73—862.34 5 Claims



2. In an instantaneous torque determining apparatus having a first and a second voltage comparator electrically connected with a torque detector for converting AC voltage signals transmitted from said torque detector into corresponding pulse signals for every cycle of said AC voltage signals, and

a delay circuit receiving said pulse signal from said first voltage comparator and delaying said pulse signal for a constant period of time;

a clock pulse generator producing a clock pulse signal at a constant frequency;

a first ratio multiplier electrically connected to said clock pulse generator and multiplying the clock pulse output by a ratio value preset at a ratio value setting terminal;

a second ratio multiplier electrically connected to said first ratio multiplier and multiplying the pulse output of said first ratio multiplier by a ratio value preset at a ratio value setting terminal;

a subtraction counter electrically connected to output terminals of said second ratio multiplier and said delay circuit and also electrically connected to the ratio value setting terminals of said first and second ratio multipliers, said subtraction counter being reset by an output pulse of said delay circuit to start subtractive counting of the output pulses of said second ratio multiplier and providing the output during the subtractive counting to the ratio value setting terminals of said first and second ratio multipliers;

a latch circuit arrangement electrically connected to said first voltage comparator and said subtraction counter for receiving said pulse signal and latching the count of said subtraction counter by said pulse signal; and

a D-A converter electrically connected to said latch circuit arrangement and converting the value latched thereby into a corresponding analog signal.

4,352,296

CHATTER FREE GEAR DRIVEN CAM ACTUATED VACUUM PUMP

Paul O. Wendler, Saginaw, and Donald L. Dzioba, Frankenmuth, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 18, 1980, Ser. No. 188,483

Int. Cl.³ F16H 53/06, 25/08

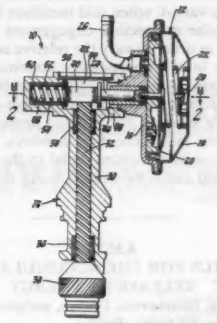
U.S. Cl. 74—55 5 Claims

1. A chatter free gear driven cam actuated vacuum pump having

a housing supporting a drive shaft carrying a lobed cam and a drive gear for driving the cam,

a vacuum pumping element driven by a push rod carried by the housing,

a return spring biasing the push rod into engagement with the lobed cam for reciprocably moving the push rod and pumping element upon rotation of the cam, the rates of cam lift and return and the force of the return spring together with vacuum forces on the pumping element being sufficiently great to apply alternately opposite torque loadings on the drive shaft capable of creating in operation torque reversals and resultant chatter causing oscillation of the drive gear, and



a torque counterbalancing mechanism carried in the housing and operative to apply to the drive shaft torque loadings opposed to those applied by the push rod, said counterbalancing mechanism comprising

a plunger reciprocably carried in the housing and a balance spring biasing the plunger into engagement with the lobed cam at a position of cam motion phased in opposition to that of the push rod,

the biasing force of the balance spring and the shape of the cam being such that the reverse torque loads applied to the drive shaft are reduced below a level capable of creating torque reversals and chatter causing oscillation of the drive gear.

4,352,297

MECHANISM FOR VARYING THE RELATIVE ANGULAR VELOCITY OF TWO SHAFTS, IN A PROPORTIONALLY CONTINUOUS MANNER

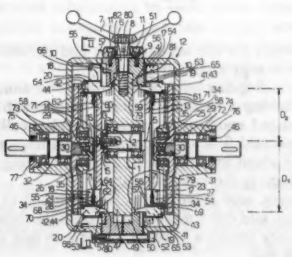
Giovanni Nardi, Pisa, Italy, assignor to Whitehead Motofides S.p.A., Leghorn, Italy

Filed Jun. 20, 1979, Ser. No. 50,472

Claims priority, application Italy, Jul. 5, 1978, 68576 A/78

Int. Cl.³ F16H 25/04

U.S. Cl. 74—63 6 Claims



1. A mechanism for varying the angular velocity of two rotary shafts relative to one another in a proportionally continuous manner, the mechanism comprising: an element rotatable

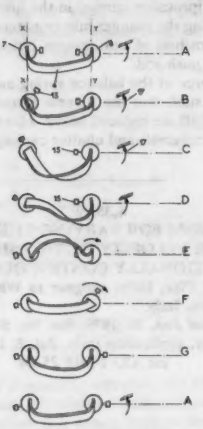
about an axis of rotation parallel with the axes of rotation of said two shafts and arranged therebetween, and a first and a second plurality of connecting members assembled on opposite sides of said rotatable element; each said connecting member angularly connecting said rotatable element to one of said shafts only when arranged in a limited number of angular connection engagement positions associated with a restricted range of angular positions about said axis of said one of said two shafts; the distance of said members from the axis of said one of said two shafts being constant during rotation, the distance of said members from the axis of said rotatable element being variable during rotation, and the distance of the axis of said rotatable element from the axes of said two shafts being able to be varied, when said members are in said limited number of angular connection engagement positions, by adjustment means in order to vary the relative angular velocity of said two shafts in a proportionally continuous manner; and means for compelling said connecting members to rotate with said rotatable element, including respective cavities provided in said rotatable element for housing respective connecting members, wherein said connecting members, in said respective cavities, can move in directions radial to the axis of the rotatable element, said radial movement being determined by said adjustment means.

4,352,298

APPARATUS FOR THE ACCUMULATION AND RELEASE OF ENERGY

Francois Duveau, Courbevoie, France, assignor to Pompes Essa Mico, Carriere sur Seine, France

Filed Apr. 11, 1980, Ser. No. 139,559
Claims priority, application France, Apr. 13, 1979, 79 09404
Int. Cl.[3] F16H *27/04, 33/02*
U.S. Cl. 74—84 R **5 Claims**



1. Apparatus for the accumulation and periodic release of mechanical energy comprising:

a spring, said spring being in the form of an elongated metal band having a longitudinal axis, said spring having first and second ends, said spring being elastically deformed between said first and second ends without any twisting thereof about its lontitudinal axis, said spring defining an open loop in the unstressed state;

drive means, said drive means being affixed to said spring first end, said drive means being rotatable about a first axis to thereby impart a twisting moment to said spring about its axis; and

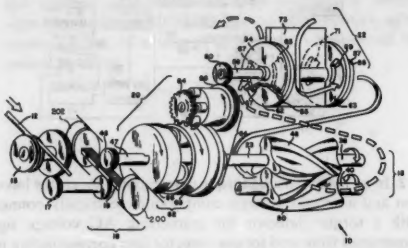
driven means, said driven means being affixed to said second end of said spring, said driven means being rotatable in a first direction about a second axis to periodically relieve forces stored during twisting of said spring first end, said driven means including means for preventing rotation of said second end of said spring in a second direction opposite to said first direction, the axes of rotation of said drive and driven means being substantially parallel.

4,352,299

INTERMITTENT MOTION GEAR APPARATUS

Robert R. Riggs, South Bend, and Paulmer D. Hunt, Mishawaka, both of Ind., assignors to The Bendix Corporation, Southfield, Mich.

Division of Ser. No. 952,029, Oct. 16, 1978, Pat. No. 4,249,453.
This application Apr. 21, 1980, Ser. No. 142,205
Int. Cl.[3] F16H *27/04*
U.S. Cl. 74—84 R **3 Claims**



1. An intermittent motion gear apparatus comprising:

a shaft fixed to a housing;

a first gear located on said shaft and having a first plurality of gear teeth;

a second gear located on said shaft;

a hub for connecting said first gear to said second gear;

a plurality of post members fixed to said second gear;

an input gear rotatable about an axis from a first position through a second position to a third position in response to an operational input signal;

a sector gear secured to said input gear, said sector gear having a second plurality of gear teeth thereon for engaging said first plurality of teeth on said first gear during the rotation of said input gear from said first position to said second position to provide said second gear with angular motion; and

a cam member secured to said input gear and having an annular circumferential surface with a recessed contour thereon, said recessed contour engaging at least one of said plurality of post members at said second position of rotation of said input gear for aligning said sector gear with said first gear to synchronize the meshing of said first and second plurality of gear teeth, said annular circumferential surface engaging at least two of said plurality of post members during the rotation of said input gear from said second position to said third position to maintain said second gear in a substantially fixed angular position.

4,352,300

COMBINED LINEAR AND CIRCULAR DRIVE MECHANISM

Johannes H. L. H. Esch, Aalten, Netherlands, assignor to Vitafin N.V., Curacao, Netherlands Antilles

Filed Aug. 21, 1980, Ser. No. 180,004
Int. Cl.[3] F16H *27/02, 29/02*
U.S. Cl. 74—89.15 **8 Claims**

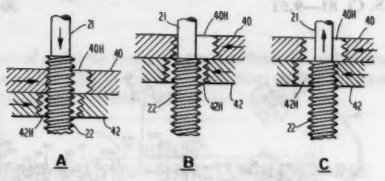
1. A drive mechanism for driving a spindle, said spindle having a threaded portion of a predetermined diameter and unthreaded portions bounding each side of said threaded portion, said mechanism comprising:

(a) A generally cylindrical spindle carrier, having a longitu-

dinal opening through which said spindle extends, said opening being eccentrically positioned in said carrier;

(b) A cylindrical bushing having a bushing opening, said spindle carrier being positioned concentrically within said bushing opening, and bearing means for movably bearing said spindle carrier within said bushing;

(c) Nut means for engaging said threaded portion of said spindle, said nut means having two nut components, each component having an internally threaded longitudinal opening, said spindle extending through each of said nut openings, said nut components being integrally fixed to and carried in said bushing opening, said nut component



openings having a greater diameter than said spindle diameter and having respective different center axes such that when said spindle threaded portion engages the internal threaded opening of one of said nut components it is free of the internal opening of the other nut component; and

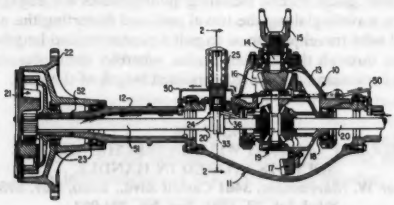
(d) Whereby rotation of said bushing in a clockwise direction causes one of said nut components to drive said spindle in a first longitudinal direction and rotation in a counter clockwise direction causes the other of said nut components to drive said spindle in the reverse longitudinal direction, and said spindle is moved in a circular path about the center axis of said bushing while said bushing is rotated.

4,352,301

LUBRICATION PUMP & FILTER FOR AXLE ASSEMBLIES

Edward Fleury, Headingly, Canada, assignor to Versatile Cornat Corporation, Vancouver, Canada

Filed Mar. 14, 1980, Ser. No. 130,441
Int. Cl.³ F16H *57/04, 1/40;* F01M *9/10*
U.S. Cl. 74—467 **5 Claims**



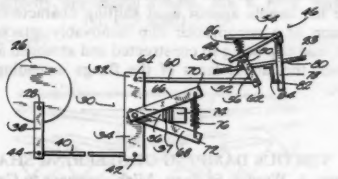
1. In an axle assembly which includes a differential assembly, a differential assembly housing for said differential assembly adapted to hold a supply of lubricating oil, half shaft casings extending from each side of said housing, half shafts within said casings, and bearing means operatively mounting the outer end portions of each of said half shafts for rotation within said casings; the improvement comprising the combination: an oil pump mounted on said axle assembly, oil intake means on said pump, an inlet tube extending from said oil intake means to said oil supply within said housing, oil outlet means on said pump, oil filter means connected to said outlet means, conduit means operatively extending from the outlet of said oil filter means to adjacent said bearings of said half shafts to convey oil, under pressure, from said filter means to said bearings, and cam means on one of said half shafts operatively connected to drive said oil pump, said oil pump, said oil intake means, said oil outlet and said filter means being removably mounted on said axle assembly externally thereof.

4,352,302

CONTROL FOR HYDROSTATIC TRANSMISSION

Gerald N. McAuliffe, and Richard E. Pearce, both of Lincoln, Nebr., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Sep. 4, 1980, Ser. No. 183,942
Int. Cl.³ G05G *1/14, 5/06, 7/00*
U.S. Cl. 74—474 **9 Claims**



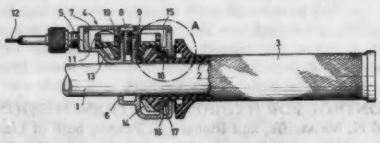
1. A control for a hydrostatic transmission having selectable positions for controlling the flow of fluid to achieve forward, reverse and neutral positions and to govern the output speed, said control including a control member operatively connected to the transmission for selectively moving the transmission between forward, neutral and reverse positions in response to movement of said control member, a pivotally movable member, actuating means mounted for movement between forward, neutral and reverse positions, means connecting said actuating means with said movable member for pivoting said movable member in response to movement of said actuating means, and connecting said actuating means and said control member for moving the transmission between forward, neutral and reverse positions in response to movement of said actuating means, and means for urging said control member toward the neutral position including first and second arms mounted coaxially with said movable member for independent pivotal movement relative to said movable member and having outer free ends located in spaced relationship to each other, means on said movable member engageable with said second arm so as to displace said second arm in a first pivotal direction in response to movement of said actuating means from the neutral to the forward positions and so as to displace said first arm in a second pivotal direction opposite to said first pivotal direction in response to movement of said actuating means from the neutral position to the reverse position, spring means biasing said arms toward each other, and means disposed between said arms for engaging said first arm so as to prevent pivotal movement of said first arm in the first direction when said second arm is pivoted by said movable member in the first direction against the biasing force of said spring means, and for engaging said second arm so as to prevent pivotal movement of said second arm in the second direction when said first arm is pivoted by said movable member in the second direction against the biasing force of said spring means.

4,352,303

GAS CONTROL GRIP FOR THE STEERING DEVICE OF A MOTOR-DRIVEN DOUBLE-WHEELED VEHICLE

Heinz Christner, Hülben, Fed. Rep. of Germany, assignor to Gustav Magenwirth GmbH & Co., Urach, Fed. Rep. of Germany

Filed Jul. 28, 1980, Ser. No. 172,985
Claims priority, application Fed. Rep. of Germany, Mar. 28, 1980, 3012034
Int. Cl.³ B62K *23/06*; G05G *7/02*
U.S. Cl. 74—489 4 Claims



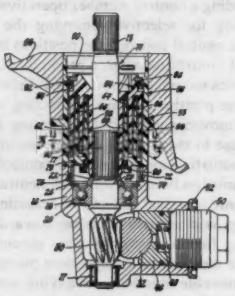
1. A gas control grip for the steering device of a motor cycle or the like in which a rotatable tubular handle formed of plastic is rotatably mounted on the steering device and in which a sectional housing is secured to the steering device around one end of the tubular handle in such a way that an annular flange on the housing fits into an annular groove in the handle to secure the handle against axial shifting characterized in the provision of a semicircular clip removably attached to the flange, said clip being so constructed and arranged as partially to cover the lateral faces of the flange extending into the groove.

4,352,304

VISCOUS DAMPING OF STEERING SHAFT

Laurence A. Warner, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 17, 1980, Ser. No. 207,439
Int. Cl.³ B62D *1/20, 3/12*; F16D *57/00*
U.S. Cl. 74—498 3 Claims



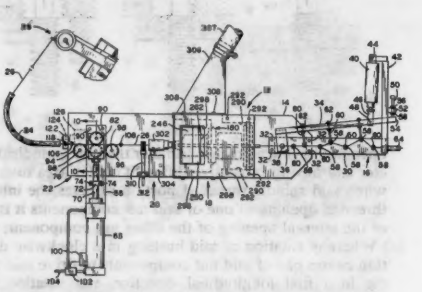
1. A steering gear for a vehicle having a manual steering shaft and a pair of output members steerably moved in response to manual turning inputs to said steering shaft comprising input gear means operatively connected to said steering shaft, output gear means meshing with said input gear means and drivingly connected to said output members, said input gear means having an elongated shaft operatively connected thereto for rotation with said steering shaft, a housing for said input and output gear means, first viscous damper means secured to said housing and disposed around a portion of said elongated shaft of said input gear means, second viscous damper means secured to said elongated shaft and nested within said first viscous damper means, said first and second damper means having relatively movable wall means spaced from one another to form a viscous fluid shear area therebetween, and a viscous fluid in said shear area for damping oscillatory input motion transmitted from said output members of said steering gear which causes the oscillating relative movement of said first and second wall means resulting in the viscous shear of said fluid in said shear area.

4,352,305

APPARATUS FOR STRIPPING INSULATION FROM WIRE

Philip G. Rodenbeck, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed Aug. 5, 1980, Ser. No. 175,442
Int. Cl.³ H02G *1/12*
U.S. Cl. 81—9.51 30 Claims



1. Apparatus for stripping the insulation off wire comprising:
a support frame,
wire guide means connected to said support frame for guiding wire along a predetermined normal wire travel path,
a blade assembly mounted on said frame comprising a plurality of circularly spaced blades encircling the wire travel path, and means for rotating said blades about an axis coaxial with the wire travel path, said blade assembly further comprising blade actuation means in engagement with said blades for causing said blades, while rotating, to move radially inwardly toward the wire travel path by a predetermined radial distance, whereby when wire is in the travel path, it will have the insulation stripped therefrom by the rotating blades,
said wire guide means including puller means for engaging wire traveling along the travel path and distorting the normal wire travel path so as to pull a predetermined length of wire through the rotating blades, whereby the blades strip the insulation off the predetermined length of the wire.

4,352,306

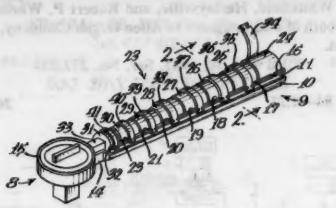
SOCKET WRENCH WITH INTERCHANGEABLE SOCKETS STORED IN HANDLE

Werner W. Martinmaas, 3461 Cashill Blvd., Reno, Nev. 89509

Filed Jul. 20, 1981, Ser. No. 284,952
Int. Cl.³ B25G *1/08*
U.S. Cl. 81—177 N 10 Claims

1. Socket member storage means for a set of interchangeable sockets of a socket wrench of the type which has a head with a socket mounting stub, said storage means comprising:
a longitudinal wall defining a long, narrow storage cavity which has an entrance opening along one side, said storage cavity having several distinct portions along its length each of which receives one socket member of a set;
a separate retaining strap operatively associated with each such portion;
a hinge connecting a first end of each retaining strap to the wall at one side of the portion with which it is associated;
and fastening means detachably connecting the other end of each retaining strap to the wall opposite said hinge,

each of said retaining straps being of a length to snugly embrace the socket member in said portion when its fastening means is connected to the wall, whereby detachment of one strap connecting means from the wall permits removal of a single socket member from the storage cavity independently of any other socket member.

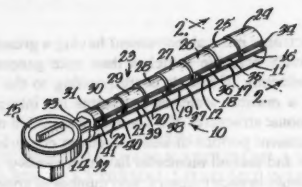


4,352,307

SOCKET WRENCH WITH INTERCHANGEABLE SOCKETS STORED IN HANDLE

Werner W. Martinmaas, 3461 Cashill Blvd., Reno, Nev. 89509

Filed Jul. 20, 1981, Ser. No. 284,953
Int. Cl.³ B25G *1/08*
U.S. Cl. 81—177 N **6 Claims**



1. Socket member storage means for a set of interchangeable sockets of a socket wrench of the type which has a head with a socket mounting stub, said storage means comprising:

a longitudinal wall defining a long, narrow storage cavity which has an entrance opening along one side, said storage cavity having several distinct portions along its length each of which receives one socket member of a set;

and a resilient member in each such portion which extends more than half-way around the socket member in said portion so as to frictionally grip and retain the socket member in the storage cavity, each said resilient member having an extremity projecting above one side of the wall, said extremity being adapted to be flexed outwardly to release the socket member for removal from the storage cavity independently of any other socket member.

4,352,308

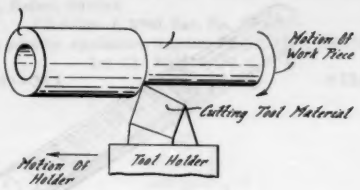
METHOD OF CUTTING CAST IRON WITH Si_3N_4 COMPOSITE CUTTING TOOL MATERIAL

Shyam K. Samanta, Ypsilanti; Krishnamoorthy Subramanian, Inkster; Andre Ezis, Grosse Ile, and David Moskowitz, Southfield, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 911,255, May 31, 1978. This application Mar. 10, 1980, Ser. No. 129,151
Int. Cl.³ B23B *1/00*
U.S. Cl. 82—1 C **8 Claims**

1. A method of machining cast iron, comprising:

deploying a ceramic as a cutting tool in continuous or interrupted machine cutting of cast iron at surface speeds of 50-7500 sfm and at depths of cut of at least 0.02 inches, wherein said ceramic cutting tool is a hot pressed Si_3N_4 based ceramic cutting tool containing only one metal oxide member of the group consisting of Y_2O_3, ZrO_2 and MgO.

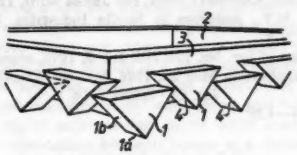


4,352,309

TRIMMING AND/OR FIN CUTTING TOOLS WITH INTERCHANGEABLE CUTTING EDGES

Peeter Thalström, Trangsund, and Karl G. Westin, Bromma, both of Sweden, assignors to AB Westin & Backlund, Stockholm, Sweden

Filed Jun. 3, 1980, Ser. No. 156,061
Claims priority, application Sweden, Jun. 8, 1979, 7905030
Int. Cl.³ B26D *1/00*
U.S. Cl. 83—697 **7 Claims**



1. A trimming/fin cutting tool comprising a tool body, and a number of cutting plates detachably mounted on said tool body and providing effective cutting edges which define at least one cutting line of the tool, wherein the cutting plates are attached to said tool body in a plane directed in the working direction of the tool so as to present cutting edges of "saw tooth" like form along said cutting line, wherein said cutting plates for said cutting line are attached to said tool body in rows at different heights relative to a base so as to define spaces between them for the passage of chips produced during cutting, and wherein the cutting plates at one height are staggered in relation to the cutting plates of another height so that the separate effective cutting edges of the cutting plates overlap each other.

4,352,310

PORTABLE KEYBOARD MUSICAL INSTRUMENT

Franco Orlandoni, 1 Crossley Pl., Park Ridge, N.J. 07056

Filed Jun. 27, 1980, Ser. No. 163,637
Int. Cl.³ G10H *1/00*; G10C *3/12*
U.S. Cl. 84—1.01 **15 Claims**

1. A portable keyboard instrument comprising two hollow tubes,

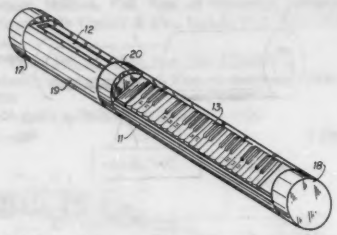
a. each tube having a cut out section, a first end section and a second end section;

b. at least one of said two hollow tubes having electronic key board means affixed to said cut out section of said tubes;

c. a pair of removable end cap means, each end cap means of said pair of end cap means being secured to an end section;

d. a connecting member means, said connecting member means being dimensioned for releasably locking together, alternatively said second end sections of said two hollow

tubes said first end sections of said two hollow tubes, or a first end section and a second end section of said two



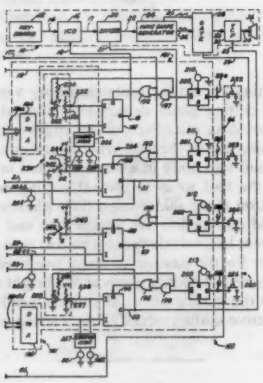
hollow tubes, each end cap means of said pair of end cap means being secured to an end section which is not releasably locked to another end section.

4,352,311

SYNTHESIZER PRESET EDITING TECHNIQUES

David A. Luce, Clarence Center, and James Scott, Trumansburg, both of N.Y., assignors to Norlin Industries, Inc., White Plaines, N.Y.

Continuation of Ser. No. 921,786, Jul. 3, 1978, abandoned. This application May 22, 1980, Ser. No. 152,431
Int. Cl.³ G10H *1/06*
U.S. Cl. 84—1.19 24 Claims



1. In an electronic musical synthesizer including multiple parameter circuits capable of synthesizing a timbre of sound in response to stored parameter signals, improved apparatus for editing the parameter signals comprising:

adjustment means for generating an adjusted parameter signal suitable for replacing a chosen one of said stored parameter signals;

comparator means for generating an indicating signal having a value depending on the relative magnitude of the chosen parameter signal and adjusted parameter signal; and

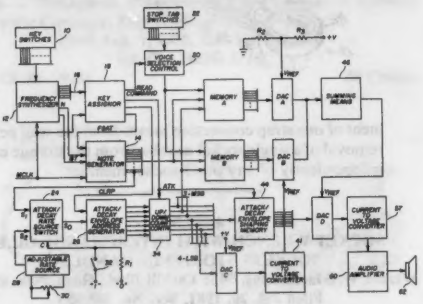
indicator means responsive to the indicating signal for indicating when the adjustment means has been adjusted to generate an adjusted parameter signal having a predetermined magnitude with respect to the chosen parameter signal.

4,352,312

TRANSIENT HARMONIC INTERPOLATOR FOR AN ELECTRONIC MUSICAL INSTRUMENT

John T. Whitefield, Harleysville, and Robert P. Woron, Allentown, both of Pa., assignors to Allen Organ Company, Macungie, Pa.

Filed Jun. 10, 1981, Ser. No. 272,223
Int. Cl.³ G10H *1/057, 1/08, 7/00*
U.S. Cl. 84—1.21 24 Claims



1. In an electronic musical instrument having a greater number of selectively actuable switches than note generators to cause the production of sounds corresponding to the respective notes of a musical scale, an apparatus for interpolating between harmonic structures of a waveform stored in memory during the transient periods of said waveform comprising;

at least first and second memories having a number of locations or zones in each memory, said number of zones being equivalent to the number of harmonic structures;

a fixed harmonic structure in each zone of the first memory;

a difference value in each zone of the second memory, said difference value equal to the difference between the fixed harmonic structures in adjacent zones of the first memory;

means for generating addresses for selectively reading out from each said memory the contents of each zone, said zone address being the upper segment of the generated address, for selectively controlling the scaling of the difference values read out from each zone of said second memory by a digital to analog converting means, said digital to analog converting means address being the lower segment of the generated address, and for selectively reading out of a transient waveform envelope memory a transient waveform envelope, said transient waveform envelope address being said generated address;

means for converting and scaling the fixed harmonic structure read out of a selected zone of the first memory having a scaling factor being a fixed value;

means for converting and scaling the difference value read out of a selected zone of the second memory having a scaling factor varying in accordance with the lower segment of the generated address;

summing means for combining the converted and scaled fixed harmonic structures read out of the selected zones of the first memory with the converted and scaled difference values read out of the selected zones of the second memory and generating an output;

means for converting and scaling the generated transient waveform envelope having a scaling factor in accordance with the generated output of the summing means; and,

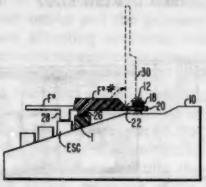
amplifying means for producing the interpolated transient harmonic structures of the waveform as sound through an audio transducing means.

4,352,313

MUSICAL KEYBOARD FOR HOME COMPUTER

Nils O. Ny, Levittown, Pa., assignor to RCA Corporation, New York, N.Y.

Filed May 30, 1980, Ser. No. 154,836
Int. Cl.³ G10C 3/12
U.S. Cl. 84—425 6 Claims



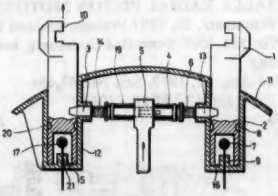
1. The combination of an alpha-numeric keyboard, a piano-like keyboard including an elongated support and a plurality of side-by-side piano-like keys each hinged at one end to said support; and means for attaching said support to said alpha-numeric keyboard with the piano-like keys extending over respective keys of the alpha-numeric keyboard such that manual depression of each piano-like key causes direct physical contact with, and depression of, a respective alpha-numeric key.

4,352,314

DEVICE FOR RELEASABLY SECURING A COUPLING HEAD TO AN EXTERNAL LOAD MOUNTED ON AN AIRCRAFT

Herbert Engel, Munich, and Thomas Hähnel, Ottobrunn, both of Fed. Rep. of Germany, assignors to Messerschmitt-Bölkow-Blohm GmbH, Munich, Fed. Rep. of Germany

Filed Jun. 15, 1979, Ser. No. 48,737
Claims priority, application Fed. Rep. of Germany, Jun. 24, 1978, 2827781
Int. Cl.³ F41F 5/02; B64D 1/04
U.S. Cl. 89—1.5 F 8 Claims



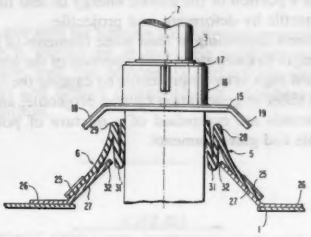
1. Device for securing external loads, such as missiles, on aircraft or similar mounting members, comprising a housing, a coupling head releasably securable to said housing, wherein the improvement comprises first means forming a socket-like recess extending inwardly from said housing and open on the outer surface of said housing for receiving said coupling head, second means mounted within said housing for releasably securing said coupling head in said socket-like recess, third means in operative engagement with said second means for releasing said second means from securing said coupling head in said socket-like recess and fourth means independent from said third means for ejecting said coupling head from said socket-like recess when said second means are released from secured engagement with said coupling head.

4,352,315

BARREL SEAL

Tore Ingestrand, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

Filed Oct. 1, 1980, Ser. No. 192,657
Claims priority, application Sweden, Oct. 2, 1979, 7908150
Int. Cl.³ F41H 5/20
U.S. Cl. 89—36 L 6 Claims



1. In a weapon cupola having an aperture through which a gun barrel extends, a seal between said weapon barrel and aperture comprising:

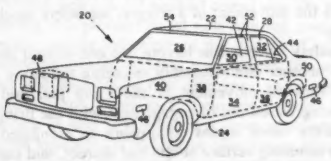
an elongate elastic bellows having at least three outwardly extending folds, said bellows having first and second ends connected to the edge of said aperture, said bellows divided along a centrally located ridge into first and second halves, said halves abutting said gun barrel periphery and each other along said ridge a distance away from said barrel, said ridge located in a plane coincident with the plane of said gun barrel motion in elevation, whereby motion of said barrel in elevation forces said halves apart in the region adjacent said barrel while maintaining a sealing relationship between halves at a distance away from said barrel.

4,352,316

LIGHTWEIGHT ARMORED VEHICLE AND METHOD OF MAKING SAME USING WOVEN POLYESTER GLASS PROTECTIVE SHEETS

Richard C. Medlin, 2562 Stirling Rd., Hollywood, Fla. 33021

Continuation-in-part of Ser. No. 920,715, Jun. 30, 1978, Pat. No. 4,316,404. This application Dec. 24, 1980, Ser. No. 220,134
Int. Cl.³ F41H 5/04
U.S. Cl. 89—36 A 17 Claims



1. A protective layer designed and constructed to dissipate at least a portion of the kinetic energy of a high velocity projectile comprising:

a plurality of woven ballistic sheets comprised of ballistic strands;

a sizing material and a bonding material which imperfectly bond with each other;

said sizing material applied to said plurality of sheets;

said plurality of sized sheets being layered next to each other and bound into a protective layer by said bonding material;

said protective layer being effective to dissipate at least a

portion of the kinetic energy of a high velocity projectile impacting upon said protective layer;

said size sheets are laminated together by said bonding material;

said laminated sized sheets are designed and constructed to delaminate when impacted by a high velocity projectile;

said delamination is effective to dissipate a portion of the kinetic energy of said projectile;

said sheets contain at least some hard filaments to dissipate at least a portion of the kinetic energy of said high velocity projectile by deforming said projectile;

said sheets containing at least some filaments of high tensile strength to dissipate at least a portion of the kinetic energy of said high velocity projectile by causing the formation of said sheet to penetration by said projectile; and

said strands are comprised of a mixture of polyester filaments and glass filaments.

4,352,317

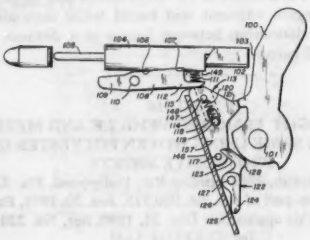
HAMMER SAFETY BLOCK

Gary Wilhelm, Hamden, Conn., assignor to Llama Gabilonda y. Cia. S.A., Vitoria, Spain

Division of Ser. No. 951,967, Oct. 20, 1978, Pat. No. 4,275,640. This application Aug. 6, 1980, Ser. No. 175,896

Int. Cl.³ F41C *17/04*

U.S. Cl. 89—154 **7 Claims**



1. A firing pin and hammer safety mechanism for a gun of the type in which a hammer is allowed to strike a firing pin in response to the movement of a trigger, the safety mechanism comprising:

firing pin safety lever means having one end pivotal about an axis and another end releasably engaging the firing pin to prevent forward movement of the firing pin, said lever means being biased out of engagement with the firing pin;

hammer safety block means comprising an elongated body having a camming surface at one end thereof, said camming surface urging the lever means into engagement with the firing pin, said hammer safety block means including on one side thereof hammer abutment means;

abutment means positioned on the hammer, said abutment means of the hammer aligned with the abutment means of said hammer safety block means to prevent striking of the firing pin by the hammer when the hammer safety block means is urged upwardly; and

means for moving the hammer safety block means downwardly to provide for disengagement of the firing pin by the safety lever means and to move said two abutment means out of alignment to allow the hammer to strike the firing pin and to move the firing pin forward.

4,352,318

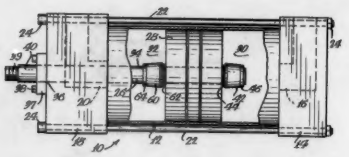
EXPANDABLE CUSHION PLUNGER FOR PISTON AND CYLINDER DEVICES

Abel E. Kolchinsky, Glenview; John F. Bowbin, Elmhurst, and Wayne M. Davis, Lake Zurich, all of Ill., assignors to Miller Fluid Power Corporation, Bensenville, Ill.

Filed Mar. 6, 1980, Ser. No. 128,357

Int. Cl.³ F15B *15/22*

U.S. Cl. 91—395 **14 Claims**



1. In a piston and cylinder device having wall means defining a piston chamber with a discharge fluid port at one end of the chamber, and piston means movable in said chamber toward and from said port, improved cushion means on said piston means movable into said port for controlling fluid flow outwardly therethrough to cushion movement of the piston means toward said port, said cushion means comprising

a resiliently expandable sleeve, said sleeve defining a distal end fixed to said piston means and an annular skirt extending toward said piston means from said distal end, said skirt defining a pressure space radially inwardly of said skirt communicating freely with said piston chamber, a major portion of the radially outer surface of the skirt narrowing toward said distal end of the sleeve and having a preselected configuration cooperating with the increased fluid pressure in said pressure space resulting from movement of the piston means toward said port with said cushion means extending into said port to effect a controlled closing of the port by said cushion means as a direct function of both expansion of the skirt caused by said increased fluid pressure thereon and the amount of piston means travel to provide a correspondingly decreasing velocity of the piston means movement toward said port.

4,352,319

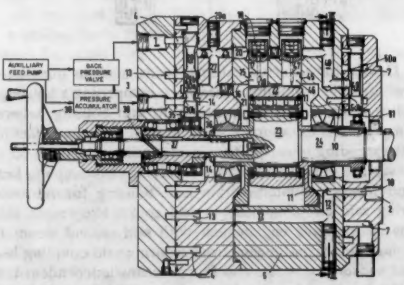
POSITIVE CONTROL FOR HYDROSTATIC MOTORS, ESPECIALLY RADIAL PISTON MOTORS

Fritz Wegerdt, Wagnerstr. 26, 7987 Weingarten, and Kurt Woelk, Mainzer Str. 121, 5300 Bonn-Bad Godesberg, both of Fed. Rep. of Germany

Filed Aug. 17, 1979, Ser. No. 67,455

Int. Cl.³ F01B *1/06*

U.S. Cl. 91—483 **25 Claims**



1. A positive control for hydrostatic motors, especially

radial piston motors, comprising two sets of working cylinders distributed in a ring-like manner each in a stationary housing part with two sets of working pistons moving therein and acting via eccentric or like drive connections on the motor shaft and two sets of slide valves, the slide valves of the one set being associated each with a working cylinder of the one set and provided with a single pair of control edges for controlling the connection of the associated working cylinder with the pressure medium intake and the pressure medium outlet and with a common actuating eccentric which, relative to the eccentric of the working pistons, is arranged in fixed phase-displaced relation on the motor shaft, whilst the slide valves associated with the other set of working cylinders of the second set of slide valves, in addition to a first pair of control edges controlling the connection of the associated working cylinder with the pressure medium intake, have also a second pair of control edges for connecting the associated working cylinder at least during coverage of the first pair of control edges with a pressure equalizing conduit, all of said pressure equalizing conduits being in constant free flow communication with a common pressure equalizing channel and the phase relation between the eccentric of the working pistons and a driving eccentric actuating the slide valves of the second set of slide valves being adjustable during operation of the motor, the arrangement being such that with any setting of the phase relation a predetermined torque is maintained, the positive control being further characterized in that when the pressure medium intakes and the pressure medium outlets of the two sets of slide valves are separated one from the other, the pressure medium intakes are arranged in parallel and via forced conduits are connected with a common pressure source that in the branch conduit leading to the intake of the slide valves having two pairs of control edges there are provided a pressure reducing means and downstream of the same a junction channel leading to the other branch channel in which junction channel there is arranged a device elevating the pressure of the pressure medium emanating from the junction channel to the working pressure of the pressure medium source.

4,352,320

SINGLE-ACTING OPERATING CYLINDER

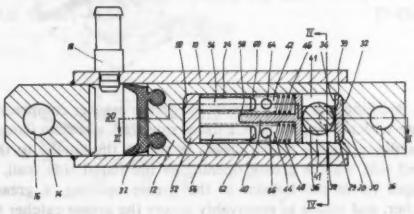
Kurt Stoll, Lenzhalde 72, D-7300 Esslingen, Fed. Rep. of Germany

Filed Jun. 25, 1980, Ser. No. 162,999

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1979, 2926258

Int. Cl.³ F15B *15/24;* F01B *31/00*

U.S. Cl. 92—13 **6 Claims**



1. A single-acting operating cylinder assembly comprising a cylinder having an operating chamber and a piston of rectangular cross section, wherein the piston contains an axial recess which has a first end wall remote from the operating chamber of the cylinder, a spring arrangement in said axial recess for urging the piston into a retracted working position, said spring arrangement being supported on the piston and on a stop mechanism which is connected to the cylinder, and further comprising the improvement wherein:

(a) the axial recess in the piston also has a second end wall adjacent the operating chamber of the cylinder;

(b) the stop mechanism extends through the axial recess transversely of the longitudinal axis of the cylinder and includes end stops for limiting both the extension and retraction directions of movement of the piston, the stop mechanism including a stop block which carries the said end stop for limiting the extension movement of the piston;

(c) the spring arrangement comprises a plurality of side-by-side coil compression springs which are clamped between the stop block and the second end wall of the axial recess; and

(d) said end stop for limiting the extension movement of the piston is formed by at least one partition wall, which partition wall lies between a pair of the compression springs and defines separate spring chambers receiving said springs.

4,352,321

ELECTRONIC CONTROL METHOD AND APPARATUS FOR AUTOMOBILE AIR CONDITIONING SYSTEM WITH AIR PURIFIER

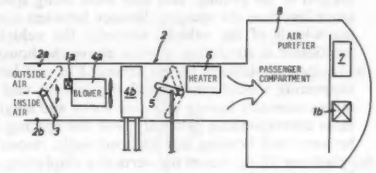
Tomonori Fukui, Kariya, and Osamu Eguchi, Anjyo, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 10, 1981, Ser. No. 272,102

Claims priority, application Japan, Jun. 17, 1980, 55-81883

Int. Cl.³ B60H *3/00*

U.S. Cl. 98—2.11 **6 Claims**



1. An electronic control method of controlling an automobile air conditioning system which includes an electrically operated switch door arranged in its first position to allow the flow of outside air into a passenger compartment through an air duct of said system and arranged in its second position to allow the flow of inside air recirculating into said compartment through said air duct, and which system is associated with an electrically operated air purifier for purifying the air in said compartment, said control method comprising the steps of:

producing at a predetermined time interval a series of first electric signals indicative of the degree of pollution of outside air flowing into said compartment through said air duct and detecting a first difference value between the preceding and following first electric signals;

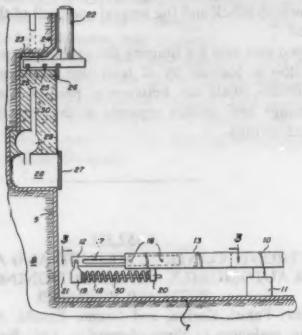
producing at said time interval a series of second electric signals indicative of the degree of pollution of inside air in said compartment and detecting a second difference value between the preceding and following second electric signals;

switching over said switch door from its first position to its second position when said first difference value is larger than a predetermined first standard value under a first set of control conditions where said switch door is manually set in its first position, and subsequently either energizing said air purifier when said second difference value is larger than a predetermined second standard value or energizing said air purifier when said second difference value is larger than said second standard value under a second set of control conditions where said switch door is manually set in its second position.

4,352,322
PREFABRICATED VEHICLE MAINTENANCE APPARATUS

Roger L. Brauer, 602 W. Austin St., Tolono, Ill. 61880

Filed Apr. 17, 1981, Ser. No. 255,184
Int. Cl.³ F24F 13/00
U.S. Cl. 98—33 R 9 Claims



1. Vehicle service apparatus, comprising

(a) a unitary housing including a bottom wall, and opposed pairs of parallel spaced vertical side and end walls, respectively, secured at their lower edges with said bottom wall, said housing being adapted for insertion within a pit formed in the ground, said side walls being spaced a distance less than the spacing distance between corresponding wheels of the vehicle, whereby the vehicle can be positioned in straddling relation above the housing;

(b) horizontal platform means arranged in said housing for supporting a mechanic beneath the vehicle, said platform means normally having effective width and length dimensions corresponding generally with the spacing distances between said housing side and end walls, respectively;

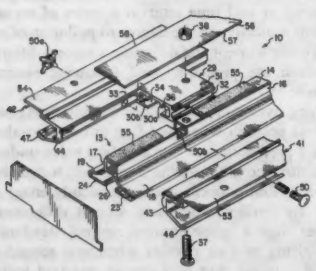
(c) platform lifting means for vertically displacing said platform means between upper and lower levels relative to said housing bottom wall; and

(d) means for varying at least one of the effective width and length dimensions of said platform means to define an opening for providing access to the portion of the housing bottom wall arranged beneath said platform means.

4,352,323
AIR DIFFUSER

Jack L. Burkarth, Dallas, Tex., assignor to Gulton Industries, Inc., Plano, Tex.

Continuation of Ser. No. 934,907, Aug. 18, 1978, abandoned.
This application Aug. 6, 1980, Ser. No. 175,639
Int. Cl.³ F24F 13/06
U.S. Cl. 98—40 D 1 Claim



1. A linear air diffuser for distributing a volume of air under pressure in a uniform output flow of controlled velocity and direction comprising:

a frame structure defining a pair of longitudinal air carrying channels situated in substantially parallel side by side relationship, each of said channels having an input orifice progressively narrowing in width along the length thereof for controlling the input of air to said channel substantially linearly along the length of the channel and having a lower portion which extends obliquely to the plane of its input orifice such that the channels diverge laterally outwardly in substantially opposite directions, said input orifices being defined in part by the lateral peripheral edges of a flat plate affixed to the frame and overlying a predetermined portion of a respective input side of each of said channels;

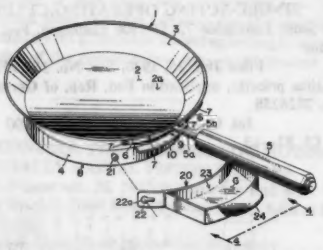
a side rail, extending longitudinally parallel to and defining one side of each of said channels, said rail having a downwardly directed side wall and a lower flange;

a defelctor vain, extending longitudinally parallel to and defining another side of each of said channels, said vain having an air turning surface merging into a laterally outwardly directed lower section which extends to a lateral edge thereof below the lower flange of the side rail to define an air output nozzle that delivers the air traversing said channel in a principally lateral direction.

4,352,324
FRYING PAN WITH A REMOVABLE GREASE CATCHER

Edwin C. S. Noh, 628 Pana Pl., Honolulu, Hi. 96816

Filed Nov. 10, 1980, Ser. No. 205,664
Int. Cl.³ A47J 37/10
U.S. Cl. 99—425 2 Claims



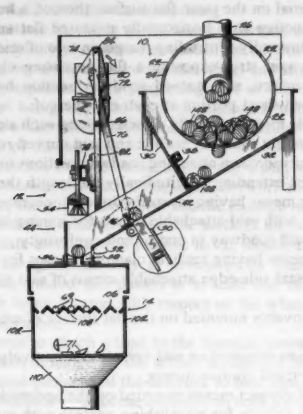
1. A frying pan with a removable grease catcher comprising a base with a frying surface, a flared side wall, a bottom flange, a handle, a handle brace, means to secure the handle to the flared side wall, a grease opening in the flared side wall, a flanged lip at the bottom of the grease opening, a grease catcher, and means to removably secure the grease catcher to the bottom flange; the grease opening is centrally located with respect to the handle, the flanged lip extends from the bottom of the grease opening into the grease catcher, and the grease catcher is centrally located with respect to the grease opening; and the means to removably secure the grease catcher includes two flanges with keyhole openings and two screws, one flange is connected to each side of the container of the grease catcher and the keyhole openings face in the same direction, and the two screws are secured to the bottom flange in a location so that they will be in alignment with the wide portion of the keyhole openings and so that when the grease catcher is removably secured to the bottom flange, the top of the grease catcher will be no higher than the base.

4,352,325

APPARATUS FOR PROCESSING WHOLE BEETS

Edwin F. Pleus, 2001 Wisconsin Ave., Sun Prairie, Wis. 53590

Filed Oct. 10, 1980, Ser. No. 196,039
Int. Cl.³ A23N 3/00; A47J 25/00
U.S. Cl. 99—483 16 Claims



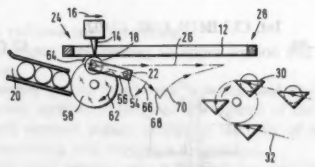
1. Apparatus for processing whole beets comprising:
(1) a plurality of beet cutting assemblies for cutting whole beets into a cylindrical plug member and a plurality of segment members;
(2) feeding means for feeding a supply of whole beets to said beet cutting assemblies;
(3) grading means for separating the plugs from the segments; and
(4) beet plug slicing means for slicing the cylindrical beet plugs into a plurality of circular disc-shaped slices.

4,352,326

SCREEN PRINTING MACHINE

Wilfried Kammann, Bünde, Fed. Rep. of Germany, assignor to Werner Kammann Maschinenfabrik GmbH, Bünde, Fed. Rep. of Germany

Filed Aug. 4, 1980, Ser. No. 175,267
Claims priority, application Fed. Rep. of Germany, Aug. 8, 1979, 2932099
Int. Cl.³ B05C 17/04, 17/06; B41L 13/18
U.S. Cl. 101—123 27 Claims



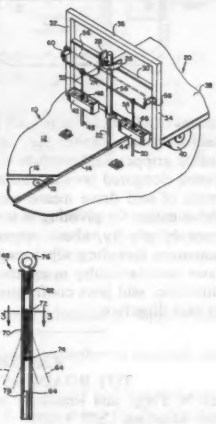
1. A screen printing machine comprising: means for mounting a screen printing stencil; a squeegee means; carrier means, comprising two carrier members, for engaging an article to be printed in two spaced regions thereof, with one carrier member being engageable with said article at one region thereof, and the other carrier member being engageable with said article at another region thereof spaced from said one region, means for reciprocating the carrier means in a path between a first station for receiving an article to be printed and a second station for discharge of the printed article; and a connecting member interconnecting the two carrier members and extending substantially parallel to the direction of the spacing between the two carrier members and substantially perpendicular to the path of the carrier means, the connecting member being arranged so that the paths of the carrier members are located between the connecting member and the stencil mounting means; and means for pivoting the connecting member so that in both said stations it is located in a position remote from a position below said article; and in which the axis of the pivotal movement of the connecting member moves with the carrier means as the carrier means moves in said path between the first and second stations.

4,352,327

TOW TRUCK SELECTOR PIN

Craig Sleep, Bangor, Pa., assignor to SI Handling Systems, Inc., Easton, Pa.

Filed Jan. 23, 1978, Ser. No. 871,680
Int. Cl.³ B61B 12/00
U.S. Cl. 104—170 9 Claims



1. A selector pin comprising first and second tubes aligned end to end, a coil spring within said tubes, the outer diameter of said spring being closely adjacent to the inner diameter of said tubes, one end of said spring being anchored to said first tube and the other end of said spring being anchored to said second tube in a manner so that the spring is under tension and maintains the juxtaposed end faces in coaxial contact while permitting the second tube to pivot relative to the first tube when the second tube is subjected to a laterally directed force exceeding the spring tension, and means connected only to said first tube for enabling said tubes to be supported on a vehicle in an upright position.

4,352,328

COUPLING ASSEMBLY FOR OVERHEAD RAIL MATERIALS-TRANSPORT SYSTEM

Erwin Grube, Bielefeld, Fed. Rep. of Germany, assignor to Dürkoppwerke GmbH, Bielefeld, Fed. Rep. of Germany

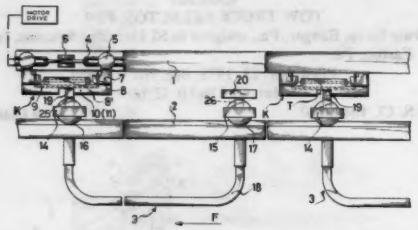
Filed Jun. 10, 1980, Ser. No. 158,126
Claims priority, application Fed. Rep. of Germany, Jun. 13, 1979, 2923890
Int. Cl.³ B65G 17/12; B61B 10/02
U.S. Cl. 104—172 S 6 Claims

1. A materials-handling system comprising:
a multiplicity of carriers;
track means including at least one endless rail for supporting said carriers upon motion thereof along said rail;
drive means juxtaposed to said track means for driving said carriers along said rail;

entraining means including a plurality of spaced grippers on said drive means for at least temporarily securing at least some of said carriers thereto to form a train of carriers for the transport of goods;

coupling means on each of said carriers for engaging and forming locks with said grippers to connect the respective carriers to said drive means; and

uncoupling means including actuators on each of said carriers for engaging, upon the approach of a train of carriers toward a stationary carrier, said entraining means to release the lock formed between a gripper and the coupling



means of a first carrier in such approaching train, whereby said stationary carrier may become entrained via the released gripper, said grippers each including a pair of juxtaposed elongated jaws extending in the direction of movement of said drive means and hingedly secured to said drive means for pivoting at least partially under the influence of gravity, about respective axes parallel to said actuators including separating means for spreading said jaws simultaneoulsy in opposite senses transverse to said direction, said jaws confronting one another transversely of said direction.

4,352,329

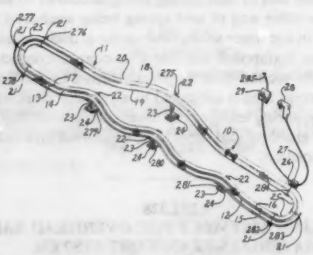
TOY ROADWAY SYSTEM

Warren N. Fetty, and Rosabelle M. Fetty, both of P.O. Box #306, Altadena, Calif. 91001

Filed Apr. 21, 1980, Ser. No. 142,001

Int. Cl.³ B60L *15/00*

U.S. Cl. 104—305 **21 Claims**



1. A roadway system comprising

a length of flat material defining a straight roadway section having an endless recess extending longitudinally of said material on the flat surface centerline thereof and an endless recess including inwardly protruding flanges spaced on each side of said centerline recess, said three recesses extending the length of said material on the same flat surface, said material being relatively rigid transversally of said material and relatively flexible longitudinally of said material for ease of abrupt bending;

two lengths of flat flexible conductive strips horizontally mounted flat and confined by said flanges in each of said two spaced recesses, each said strip being freely and independently slidable in its respective recess, each said strip exposing a flat unceasing electrical contact surface, said conductive strip material being relatively thin for ease of abrupt bending;

a length of material defining a curved roadway turn section having three endless recesses extending longitudinally of said material on the same flat surface thereof, a length of flat conductive strip horizontally mounted flat and confined by inwardly protruding flanges in two of said recesses, each said strip exposing a flat unceasing electrical contact surface, said curved roadway section having a non-curved short portion at each end thereof;

an attachable means inwardly directed along each side-edge of said straight roadway section and said curved roadway section for use when attaching roadway sections together, said means extending longitudinally the length thereof;

a connector means having inwardly directed means endwise engaging with said attachable means for joining two sections of said roadway in end to end conformity;

a support means having resilient clamping means for engaging with said side-edge attachable means of said roadway sections;

a vehicle movably mounted on the flat surface of said roadway;

a motor means mounted on said vehicle conductively linked to an electrical contact means;

an electrical contact means mounted on the underside chassis of said vehicle for establishing contact with said conductive strips for transmitting electrical power from said strips to said motor means;

a drive means mounted on said chassis having wheels with thread in frictional contact with said flat surface of said roadway;

a means for transmitting mechanical drive force from said motor means to said drive means;

a laterally movable skid-limiting means mounted rearwardly on said vehicle chassis engaging with said recess of said roadway;

means for transmitting electrical power from a source of power to said conductive strips; and

a guide means downwardly directed and forwardly mounted on said vehicle chassis engaging with two said recesses of said roadway.

4,352,330

APPARATUS FOR SUSPENDING, LOCATING, MOVING OR FASTENING LOADS

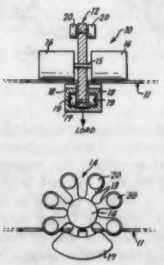
Alan W. Tupper, The Weavers House, Castle Combe, Wiltshire SN14 7HX, England

Filed Mar. 31, 1980, Ser. No. 135,443

Claims priority, application United Kingdom, Apr. 6, 1979, 7912213

Int. Cl.³ B61B *3/00, 12/02*

U.S. Cl. 104—96 **13 Claims**



1. A system for locating a load from a support area, which system comprises:

(a) a longitudinally and laterally extensive network formed of a first series of rigid or semi-rigid, generally parallel elongate elements and a second series of rigid or semi-rigid, generally parallel elongate elements extending transversely of the elements of the first series, for location in a desired position for the attachment of a load thereto, and

(b) an attachment device comprising

(i) at least one rotatable wheel which is formed with recesses in its periphery to receive elements of the network, the recesses being evenly spaced around the wheel and adjacent recesses being separated by a projecting part of the wheel and the wheel being engaged with the network with the general plane of the wheel substantially perpendicular to the general plane of the network,

(ii) a location member mounted on the wheel at a peripheral part thereof, and on the side of the network remote from the axis of the wheel, the wheel and the location member having cooperating relatively rotatable surfaces allowing the wheel to rotate about its axis relative to the location member with said elongate elements of either series thereof being received, guided and passed in at least one of said recesses while being located with respect to the wheel by the location member,

(iii) means to attach a load to the location member, and

(iv) means mounted on the wheel, bridging a plurality of said elongate elements of the network to bear against and to ride over surface areas of the network on both sides of the wheel, on the side of the network remote from the location member,

the spacing of the elongate elements in both said series thereof being arranged to provide continuous engagement with the attachment device while said means mounted on the wheel continuously bear against and ride over the surface of the network remote from the location member.

4,352,331

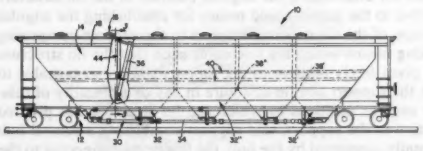
RAILWAY HOPPER CAR

Arthur I. Anderson, St. Paul, and Louis J. Harvatin, Minneapolis, both of Minn., assignors to North American Car Corporation, Chicago, Ill.

Filed Apr. 29, 1980, Ser. No. 144,848

Int. Cl.³ B61D *7/00, 7/32;* **B65G** *53/04*

U.S. Cl. 105—248 **23 Claims**



1. A railroad car comprising:

an elongate shell having an upper section and a lower section;

extension means interposed between said shell upper and lower sections to increase the volume of the railroad car;

lateral support means extending laterally of said shell for supporting said extension means; and

longitudinal support means intersecting said lateral support means and contacting said shell at said extension means, and extending longitudinally of said shell for substantially preventing pressure established internally of said shell from being applied to said extension means.

20. A railroad car comprising:

an elongate shell having an upper section and a lower section;

extension means interposed between said shell upper and lower sections to increase the volume of the railroad car;

lateral support means extending laterally of said shell for supporting said extension means; and

longitudinal support means intersecting said lateral support means and contacting said shell at said extension means and extending longitudinally of said shell.

4,352,332

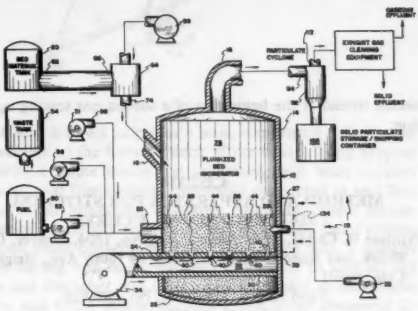
FLUIDIZED BED INCINERATION OF WASTE

Virgil F. Baston, Idaho Falls, Id., assignor to Energy Incorporated, Idaho Falls, Id.

Division of Ser. No. 51,777, Jun. 25, 1979, abandoned. This application Jun. 19, 1980, Ser. No. 161,181

Int. Cl.³ G21F *9/14*

U.S. Cl. 110—346 **4 Claims**



1. A method of treating waste including phosphorus without precipitating difficulties due to creation of phosphoric acid, coating of parts causing reduced efficiency and contamination of bed particles comprising the steps of:

introducing fuel into a vessel;

introducing air into the vessel adequate to support fluidization and combustion;

introducing waste comprising phosphorus material into the vessel;

providing the vessel with a fluidized bed material comprising calcium and a vapor space above the fluidized bed;

elevating the temperature of the fluidized bed to an elevated level within a range on the order of 750° C. to 950° C.;

elevating the temperature of the vapor space to an elevated level within a range on the order of 600° C. to 900° C.;

causing the waste to be placed in the bed simultaneously causing incineration of waste and formation of dry solid stable inert calcium phosphate.

4,352,333

SEWING MACHINE HAVING THREAD CUTTING DEVICE

Masayuki Yamazawa, Kariya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jul. 17, 1980, Ser. No. 169,692

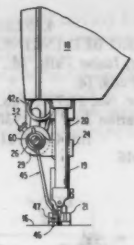
Claims priority, application Japan, Jul. 17, 1979, 54-098923[U]

Int. Cl.³ D05B *65/02*

U.S. Cl. 112—291 **8 Claims**

1. A sewing machine comprising a bed including a throat plate, an overhanging arm extending from said bed and terminating in a head, a needle bar mounted for reciprocatory movement in said head, a needle carried by said needle bar, a presser bar mounted for vertical reciprocatory movement in said head rearwardly of said needle bar, a presser foot pivotally mounted on said presser bar for holding a workpiece against said throat plate, a presser bar control lever means for moving said presser foot in the vertical direction with said presser bar between a raised position and a lowered position, cutting means for cutting off a needle thread and a bobbin thread simultaneously below said throat plate upon completion of a sewing operation

and thereafter locating said needle at its uppermost position and a thread cutting device for cutting off the free end of said



needle thread at the beginning of a subsequent sewing operation.

4,352,334

METHOD AND APPARATUS FOR STITCHING MATERIAL ALONG A CURVE

William R. Childs, 77 S. Adams, Apt. No. 1504, Denver, Colo. 80209, and Randall Melton, 24150 E. 160th Ave., Brighton, Colo. 80601

Filed Aug. 3, 1981, Ser. No. 289,825
Int. Cl.³ D05C *5/02*
U.S. Cl. 112—266.1 7 Claims

IN STITCHING ALONG AN ARC RELATIVE CHARACTER STITCH POINTS WITH REFERENCE TO ARC ORIGIN
COMBINE (Δx, Δy) OR (Δx_R, Δy_R) WITH A PREVIOUS DELTA OR CHARACTER STITCH POINT TO DETERMINE X,Y COORDINATES FOR NEXT DELTA STITCH POINT WITH REFERENCE TO THE ARC ORIGIN
DETERMINE MAGNITUDE OF CHANGE IN X,Y DIRECTIONS BETWEEN SUCCESSIVE STITCH POINTS FOR USE IN MOVING CARRIAGE ASSEMBLY
LETTER ENVELOPE
ARC ORIGIN
R = RADIUS OF CIRCULAR ARC
R_E = EFFECTIVE RADIUS OF ARC
ANGLE (α) = ANGLE SUBTENDED BY LETTER (α) ENVELOPE

1. A method of stitching material along a curve using digital circuitry and memory means, comprising the steps of:

positioning the material to be stitched in a desired location relative to a threaded needle;

selecting one or more characters to be stitched along the curve from the memory means, all of the selected characters to be stitched being defined having a plurality of points in the memory means;

providing a magnitude of curvature of the curve along which each selected character is to be stitched;

determining the magnitude of an angle for each of the selected characters to be stitched, the magnitude of each angle of each selected character to be stitched determined using the magnitude of curvature;

sensing the position of the needle with respect to the material;

moving the material or the needle to determined locations when the needle is out of the material based upon a determination of stitch locations using each determined angle in order to stitch each selected character along the curve; and

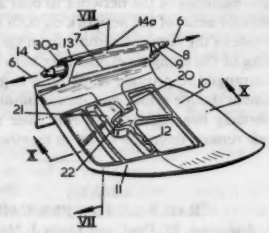
stitching the material at the determined locations when the needle is in the material so that each selected character is stitched along the curve.

4,352,335

YACHT KEELS

Keith C. Sugden, 99 Ringley Rd. West, Outwood, Radcliffe, Manchester, M26 9DW, England

PCT No. PCT/GB78/00014, § 371 Date May 16, 1979, § 102(e) Date May 16, 1979, PCT Pub. No. WO79/00151, PCT Pub. Date Mar. 22, 1979
PCT Filed Sep. 14, 1978, Ser. No. 127,213
Claims priority, application United Kingdom, Sep. 16, 1977, 38676/77
Int. Cl.³ B63B *41/00*
U.S. Cl. 114—143 13 Claims



1. A keel, comprising: two mutually inclined fins forming a unitary structure which is mounted on a support secured to a hull such that the fin structure is pivotal about an axis extending longitudinally of the hull and through the support, and means for establishing the angular position of the fin structure relative to the support, said means for establishing the angular position of the fin structure relative to the support comprising locking means which are releasable such that the fin structure can pivot freely relative to the support and are engageable to lock the support and fin structure in any of a plurality of relative angular positions to which the fin structure has pivoted relative to the support, said support comprising a central hub pivotally supported by the hull, the fins being connected to the hub.

4,352,336

ADJUSTABLE CLEAT

Ramon Tostado, 915 W. Kensington Rd., Los Angeles, Calif. 90026

Filed Jul. 21, 1980, Ser. No. 170,590
Int. Cl.³ B63B *21/08*
U.S. Cl. 114—218 8 Claims

1. A cleat comprising:

a base;

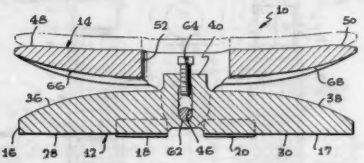
a plurality of feet on said base for attaching said base;

first and second arms on said base, said arms being directed away from each other, said feed being positioned below said arms so that when said feet are attached to a surface, said arms are spaced from the surface;

an opening through said base and between said arms in a direction transverse to said arms, said opening being a slot extending in a direction away from said feet in a direction substantially normal to said arms;

a head having first and second depending flanges thereon,

said first and second flanges embracing said base on each side thereof at said slot through said base, a pivot pin extending through said flanges and through said slot opening so that said head is rockably mounted on said base on said pivot pin, an adjustment screw threadedly engaged in said base and extending into said slot to limit the opening of said slot to adjustably limit the upward motion of said pivot pin in said slot;



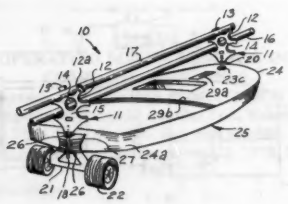
first and second horns on said head, said first and second horns being respectively positioned adjacent said first and second arms to respectively coact with said arms to clamp a line therebetween, said horns being divergent from said arms in a direction away from said pivot pin so that the jaws defined by said horns and said arms are capable of receiving and clamping lines of different sizes, so that lines of different sizes can be secured in said cleat and adjustment of said screw in said slot provides for cleat securement of a broad range of line size.

4,352,337

MAST AND BOOM CARRIER COMBINATION FOR SAILING VESSELS

Frank J. Wyoral, 7315 Lahser, Birmingham, Mich. 48010

Filed May 1, 1980, Ser. No. 145,840
Int. Cl.³ B63B *17/00*
U.S. Cl. 114—343 **5 Claims**



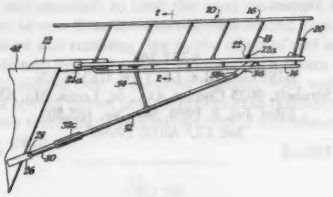
1. A mast and boom carrier for sailing vessels, comprising a pair of support members for removably supporting masts and booms, each of said support members having a body with a plurality of outwardly facing openings in a side peripheral edge thereof for receiving mast and boom portions; first means for removably attaching one of said pair of support members to a stern of a vessel; and second means for removably attaching the other of said pair of support members to a relatively forward portion of a vessel, each of said first and second means for attaching said pair of support members including a pin secured to each said body, said second means including a cylindrical holder receiving said pin and having a plurality of radially outwardly extending portions on the bottom end thereof, said radially outwardly extending portions extending radially outwardly different distances so as to enable said cylindrical holder to be accommodated in various diameters of mast openings in a sailing vessel.

4,352,338

PULPIT

Gerald H. Wilson, 1712 SW. 24th St., Ft. Lauderdale, Fla. 33315

Filed Aug. 29, 1980, Ser. No. 182,807
Int. Cl.³ B63B *17/00, 17/04*
U.S. Cl. 114—364 **4 Claims**



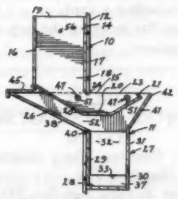
1. A knock-down pulpit for a boat, comprising: a first brace connectable to the forward deck of the boat; a body support platform; a frame means for supporting said body support platform, said frame means removably connected to said first brace; a rail projecting upwardly from said frame means; means for removably connecting said rail to said frame means; a second brace connectable to the bow of the boat; a support means having one end removably connected to said second brace and the other end removably connected to said frame means, said frame means includes a first upper elongated U-shaped, and a second lower elongated U-shaped tubular member of lesser diameter than said first upper tubular member connected to said upper tubular member, said rail includes a third, elongated U-shaped tubular member with a plurality of support struts extending downwardly therefrom; and said means for connecting said rail to said frame means includes a plurality of rail sockets connected to said frame means; said rail sockets engaged with the free ends of said support struts; means for securing said support struts within said rail sockets.

4,352,339

RABBIT FEEDER

Howard Lewis, 16820 Crowder Rd., SE., Tenino, Wash. 98589

Filed Jan. 23, 1981, Ser. No. 227,632
Int. Cl.³ A01K *5/01*
U.S. Cl. 119—18 **10 Claims**



10. A bunny feeder for mounting to a rabbit hutch below a rabbit creep feeder in which the creep feeder includes a feed trough with a front lip, the bunny feeder being mountable through an opening having a prescribed vertical dimension in an upright wall of a rabbit hutch, said bunny feeder comprising:

an upwardly open bunny feed hopper having a front wall and a back wall spaced apart by end walls;

a front edge along the bunny feed hopper front wall;

mounting means on the bunny feed hopper adapted to mount the creep feeder with its feed trough situated within the bunny feed hopper and with the front edge of the bunny feed hopper spaced forwardly of the creep feeder trough front lip;

a bunny feed trough communicating with the bunny feed hopper positioned below the front hopper edge and

adapted to receive feed spilled over the lip of the creep feeder feed trough;

guide surfaces between the front and back walls of the bunny feed hopper; and

a cover slidably engaging the guide surfaces and movable thereon between a position partially covering the bunny feed hopper and another position to one side of the bunny feed hopper.

4,352,340

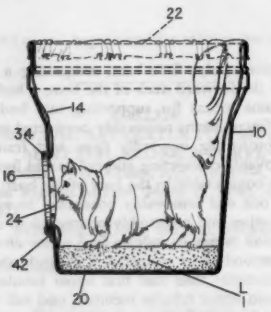
DISPOSABLE LITTER DEVICES

John R. Strubelt, 9025 Condor Ave., St. Louis, Mo. 63114

Filed Jul. 3, 1980, Ser. No. 165,503

Int. Cl.³ A01K *29/00*

U.S. Cl. 119—1 **4 Claims**



1. An animal litter device comprising a shell and a cover, said shell including a flat base and an upwardly extending enclosing wall of substantial height, said upwardly extending wall being provided with an access aperture sized for passage of the animal therethrough, said access aperture being located in the wall intermediate the base and the upper periphery thereof,

a disposable bag disposed in the shell covering the base and the inner faces of the wall, and extending over the upper periphery thereof,

said lid being adapted for snug fitting engagement over the upper periphery of the shell whereby to hold the bag in place and also including a vent,

and clamping means for securing the bag along the margins of the access aperture.

4,352,341

WASTE HEAT BOILER AND STEAM SUPERHEATER SYSTEM

James R. Styslinger, Houston, Tex., assignor to The M.W. Kellogg Company, Houston, Tex.

Filed Apr. 6, 1981, Ser. No. 251,616

Int. Cl.³ F22D *1/00*

U.S. Cl. 122—7 R **10 Claims**

1. In a system comprising a waste heat boiler, a steam drum, a steam superheater, means for passing water through said waste heat boiler to produce steam, means for passing the steam to said steam drum, means for passing steam from said steam drum through said steam superheater to produce superheated steam and means for passing a process stream through the shell of said waste heat boiler, the improvement which comprises:

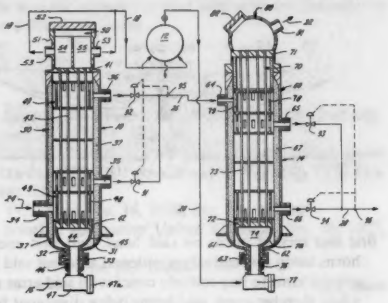
a waste heat boiler comprising

a shell having at the lower end a portion of reduced cross-section containing an expansion joint,

a tube bundle within said shell, the top of said bundle affixed to said shell and the bottom being a hollow floating head,

a head at the upper end of said shell having a plurality of steam outlets,

pipe means attached to said floating head, said pipe means extending through said lower end portion of reduced cross-section of said shell and attached to said shell below said expansion joint for introducing water to said tubes of said tube bundle,



inlet means in said shell for passing a process stream in indirect cocurrent exchange with the water in said tubes, and

outlet means in said shell for removal of said process stream.

4,352,342

AUTOMATIC VENTILATION APPARATUS FOR LIQUID SYSTEMS WITH FORCED FLOW

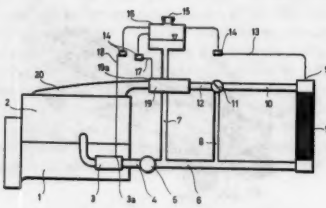
Gyula Cser, and Arpad Pataki, both of Budapest, Hungary, assignors to Autoipari Kutato Intezet, Budapest, Hungary

Filed Nov. 29, 1979, Ser. No. 98,510

Claims priority, application Hungary, Nov. 30, 1978, AU 414

Int. Cl.³ F01P *3/22*

U.S. Cl. 123—41.54 **3 Claims**



2. An automatic venting liquid-coolant engine-cooling system for a combustion engine of a motor vehicle, comprising:

an engine having liquid-coolant spaces, means forming a circulating path for liquid coolant connected with said spaces and a pump in said path, said path having a plurality of geodetic high points at which air can accumulate;

an expansion tank having a fall pipe connected to said pump at an intake side thereof;

respective vent pipes each connecting one of said geodetic high points to said expansion tank; and

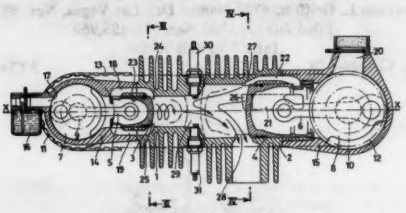
a respective variable flow throttle in each of said vent pipes provided with means affording substantially free flow of gas past the flow throttle to said expansion tank but generating a flow-throttling effect upon traversal by liquid during the forced displacement thereof by said pump, said housing being formed with a whirl-generating element imparting vortex flow to liquid traversing said chamber.

4,352,343

CONSTRUCTIONAL IMPROVEMENTS IN A TWO-STROKE OPPOSED PISTON ENGINE OPERATING WITH STRATIFIED CHARGE

Giovanni Batoni, Pontedera, Italy, assignor to Piaggio & C. S.p.A., Genoa, Italy

Filed Jul. 21, 1980, Ser. No. 171,235
Claims priority, application Italy, Nov. 27, 1979, 27599 A/79
Int. Cl.³ F02B *25/12*
U.S. Cl. 123—51 BA 2 Claims



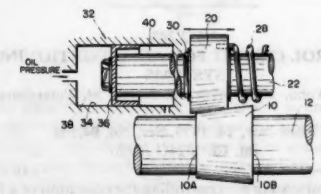
1. A two-stroke engine with opposed pistons moving in cylinders of different before having a common axis, which are each fed separately by a relative crankcase-pump, the cylinder of smaller bore being fed with richer fuel-air mixture, and the cylinder of greater bore being fed with less rich mixture, the two cylinders communicating to form a combustion chamber, wherein the two cylinders are connected by a bell-shaped portion constituting the combustion chamber, and transfer ducts for the richer mixture open into the cylinder of smaller bore tangentially at its lateral wall, wherein the lateral wall surface of said combustion chamber is a surface of revolution, having a generating curve which is formed substantially by arcs of a circle which are tangential to each other, said generating curve being inclined to the axis by an angle of about 3°–7° at that end which connects to the smaller bore cylinder forming a first surface whereas this angle is about 70°–80° at that end which connects to the other cylinder forming a second surface, wherein at least one spark plug is located substantially at a junction of the first and second surfaces.

4,352,344

VALVE OPERATING MECHANISM FOR INTERNAL COMBUSTION ENGINES

Shunichi Aoyama, and Kazuyuki Miisho, both of Yokohama, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jun. 27, 1980, Ser. No. 163,910
Claims priority, application Japan, Jul. 3, 1979, 54-84273
Int. Cl.³ F01L *1/34*
U.S. Cl. 123—90.18 3 Claims



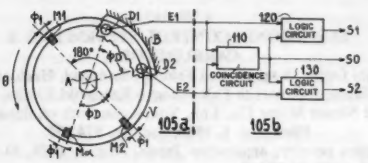
2. A valve operating mechanism of an internal combustion engine comprising a first cam rotatable about an axis in timed relation to the engine speed, a rocker arm operatively engaged with the valve of the engine and rockable to open and control closing of said valve, a second cam rockable about an axis parallel to the axis of said first cam and interposed between said first cam and said rocker arm to provide an operative connection therebetween, said first and second cams having mating cam faces which taper axially thereof, and means for shifting one of said first and second cams axially thereof relative to the other thereby varying the angular position of said second cam independently of that of said first cam in response to variation of the engine operating condition, in which said shifting means comprises a camshaft which is arranged axially movable and on which said second cam is journaled, a retaining ring attached to said camshaft to limit the axial movement of said second cam in one direction thereof, said second cam being pushed against said retaining ring by the effect of said tapered cam faces of said first and second cams and by a return spring so that said second cam is movable together with said camshaft, and a control device controlling the axial position of said camshaft and therefore of said second cam in accordance with the engine speed.

4,352,345

SHAFT POSITION SENSOR FOR INTERNAL COMBUSTION ENGINE EQUIPPED WITH AN ELECTRONIC IGNITION SYSTEM

Christian Menard, and Philippe Gaches, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Sep. 25, 1979, Ser. No. 78,808
Claims priority, application France, Sep. 29, 1978, 78 27923
Int. Cl.³ F02D *5/16*
U.S. Cl. 123—414 4 Claims



1. Internal combustion engine fitted with M cylinders having an electronic ignition system including a position sensor for pistons comprising a set of M+1 conductive members, all identical, synchronously rotated by the engine's crankshaft, this set of conductive members comprising M members equally spaced from each other, and the +1 member being angularly displaced from one of said M members, two fixed adjacent detectors that supply identical electrical signals out of phase by an angle that is substantially larger than the maximum ignition advance angle of the motor, electronic means for processing the output signal of these two detectors: including first means for supplying a synchronisation signal for the cycle igniting the motor, a second means for supplying two representative synchronisation signals of the static advance and of the maximum dynamic advance during ignition.

4,352,346

ELECTRONIC CONTROL SYSTEM FOR A CARBURETOR

Hisashi Osano, Koganei, and Takuro Morozumi, Hachioji, both of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo and Nissan Motor Co., Ltd., Yokohama, both of, Japan

Filed Mar. 27, 1980, Ser. No. 134,612
Claims priority, application Japan, Mar. 28, 1979, 54-36411
Int. Cl.³ F02M *1/08*
U.S. Cl. 123—440 7 Claims

1. An electronic control system for a carburetor of an internal combustion engine having an induction passage means and an air-fuel mixture supply means, comprising:

a choke valve disposed in said induction passage means,

bimetal means for actuating said choke valve,

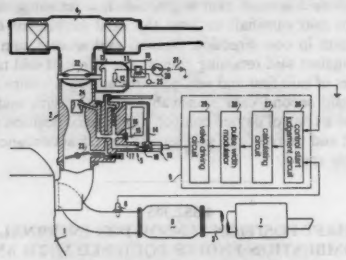
a heater for heating said bimetal means,

detecting means for detecting the content of exhaust gases,

control means for controlling the air-fuel ratio of the mixture supplied by said air-fuel mixture supply means,

electronic control means for actuating said air-fuel ratio control means,

said electronic control means for being responsive to current passing through said heater and to an output signal from said detecting means, respectively, such that the air-fuel



ratio is controlled to a value providing satisfactory cold engine operating performance by said current passing through said heater, and is controlled to the stoichiometric air-fuel ratio by said output signal from said detecting means when the engine has been warmed-up, respectively.

4,352,347

ELECTRONIC CONTROL SYSTEM FOR A CARBURETOR

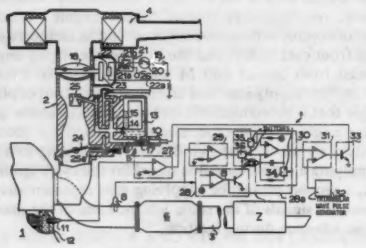
Hisashi Osano, Koganei, and Takuro Morozumi, Hachioji, both of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo and Nissan Motor Co., Ltd., Yokohama, both of, Japan

Filed Aug. 1, 1980, Ser. No. 174,379

Claims priority, application Japan, Aug. 2, 1979, 54-98916; Aug. 2, 1979, 54-98917

Int. Cl.³ F02M *7/18*

U.S. Cl. 123—440 **9 Claims**



1. An electronic control system for a carburetor of an internal combustion engine having an induction passage, engine cooling water and means for supplying an air-fuel mixture to said induction passage, comprising

means for converting the temperature of the engine cooling water to a first voltage signal,

a choke valve disposed in said induction passage,

bimetal means for actuating said choke valve,

means comprising a positive temperature coefficient heater for heating said bimetal means,

circuit means for producing a second voltage signal dependent on the resistance of said positive temperature coefficient heater,

air-fuel ratio control means for controlling the air-fuel ratio of the mixture supplied by said air-fuel mixture supplying means,

a calculating circuit means for combining said voltage signals from said converting means and said circuit means, respectively, and

electronic control means for controlling said air-fuel ratio control means, said electronic control means being responsive to output electric signals of said calculating circuit means such that the air-fuel ratio is controlled to a value providing satisfactory cold engine and warming up operating performance.

4,352,348

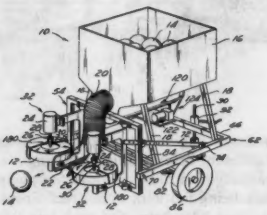
SOCCER BALL PRACTICE MACHINE

Lawrence L. Griffith, 4720 Nambe Dr., Las Vegas, Nev. 89121

Filed Jun. 3, 1980, Ser. No. 155,950

Int. Cl.³ F41B *15/00*

U.S. Cl. 124—78 **3 Claims**



1. A soccer ball practice machine, comprising:

a pair of rotating wheels separated by a distance sufficient to engage a soccer ball between them and propel it toward a soccer player to facilitate the practice of soccer skills;

a hopper for containing a large number of said soccer balls;

guide means for conducting said soccer balls in said hopper from said hopper to said wheels; and

a pair of mounting members for individually mounting said wheels, said mounting members being rotatably mounted to provide means for selectively increasing or decreasing said distance between said wheels to accommodate soccer balls of various diameters;

a rod between said mounting members to provide means for adjusting the rotational position of said mounting members so that said wheels are separated by a distance sufficient to engage and propel said soccer balls of various diameters; and

tension means on said rod for (i) permitting said mounting members to spread apart in response to a larger soccer ball to increase said distance between said wheels by an amount sufficient to propel said larger soccer ball without damaging it, and (ii) automatically restoring said mounting members to their original position after said larger soccer ball has been propelled.

4,352,349

CONTROL CIRCUIT FOR AIR CONDITIONING SYSTEMS

Robert W. Yoho, 10606 49th St., North, St. Petersburg, Fla. 33520

Filed Nov. 14, 1979, Ser. No. 94,103

Int. Cl.³ F24C *15/20*

U.S. Cl. 126—299 R **10 Claims**

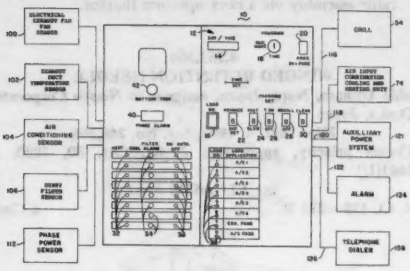
1. A control system for controlling the operation of a forced air input cooling and heating unit including an input fan which forces outside air into a building and for controlling the operation of a grill and an exhaust unit including an exhaust duct and an exhaust fan which vents vapors from the grill to the outside of the building, comprising in combination:

an exhaust fan sensor for sensing the electrical input to the exhaust fan;

a first temperature sensor disposed within the exhaust duct for sensing the temperature in the exhaust duct;

grill control means for controlling the operating state of the grill;

an interlock means connected to said exhaust fan sensor and said first temperature sensor and said grill control means for



inhibiting the operation of the grill and the exhaust fan when said exhaust fan sensor senses the absence of electrical input to the exhaust fan or when said temperature sensor senses a temperature rise in the exhaust duct above a normal operating temperature upon inoperation of the exhaust fan.

4,352,350

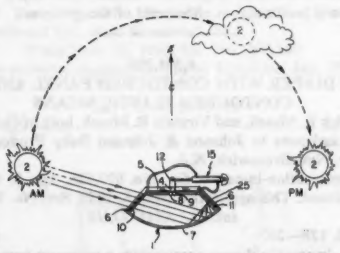
MEANS FOR TRACKING THE SUN

Carl W. Johnson, Rte. 3-Box 93, North Judson, Ind. 46366

Filed Nov. 19, 1979, Ser. No. 95,349

Int. Cl.³ F24V *3/02*

U.S. Cl. 126—425 **16 Claims**



1. An assembly supported for movement in order to accurately direct a solar collector to follow the motion of the sun, comprising a pair of heat responsive boiler means, a pair of heat responsive branch elements extending in an outward direction in relation to said heat responsive boiler means and operatively associated therewith, image means for focusing the rays of the sun simultaneously against both of said heat responsive boiler means for heating the latter when the assembly is correctly aimed at the sun, and control means responsive to any differentials in the heated conditions of said heat responsive boiler means whereby to impart motion to the assembly to cause said image means to follow the sun and thereby substantially continuously focus its rays simultaneously against both of said heat responsive boiler means.

4,352,351

ELECTRONARCOSIS APPARATUS

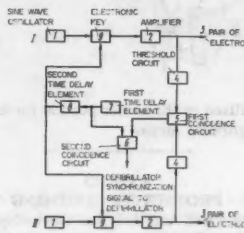
Igor V. Venin, ulitsa Pozharskogo, 2, korpus 1, kv. 9; Tatyana V Vidershain, ulitsa Valovaya, 19, kv. 6; Vladimir I. Rodionov, ulitsa Zayachkivskogo, 7, kv. 27; Andrei A. Smerdov, ulitsa Tudora, 14, kv. 6, all of Lvov, and Viktor Y. Tabak, ulitsa Vyshnyakovskaya, 33, kv. 115, Moscow, all of U.S.S.R.

Filed Sep. 24, 1980, Ser. No. 190,329

Claims priority, application U.S.S.R., Jan. 25, 1978, 2573685

Int. Cl.³ A61N *1/34*

U.S. Cl. 128—1 C **1 Claim**



1. Electronarcosis apparatus, comprising

first and second channels each having a sine wave oscillator having an output, an electronic key electrically connected to the output of said oscillator and having a control input and an output, an amplifier electrically connected to the output of said key and having an output, and a pair of electrodes electrically connected to the output of said amplifier;

a first threshold circuit having an input electrically connected to the output of the amplifier of said first channel and an output;

a second threshold circuit having an input electrically connected to the output of the amplifier of said second channel and an output;

a first coincidence circuit having a first input electrically connected to the output of said first threshold circuit, a second input electrically connected to the output of said second threshold circuit and an output;

a second coincidence circuit having a first input electrically connected to the output of said first coincidence circuit, a second input and an output;

a first time delay element having an output electrically connected to the second input of said second coincidence circuit; and

a second time delay element having an input electrically connected to the output of said first time delay element and an output electrically connected to the control inputs of said electronic keys, said second coincidence circuit providing at its output an output signal for triggering defibrillator synchronization.

4,352,352

HEAD GEAR MANIPULATOR FOR INVALIDS

Franz Janovsky, Flachsweg 6, Vienna A-1220, and Erhard Demmer, Weinberggasse 41, Vienna A-1190, both of Austria

Filed Apr. 23, 1981, Ser. No. 256,791

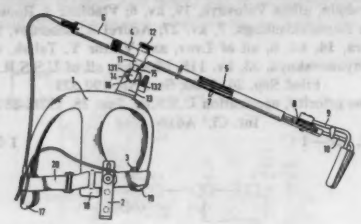
Claims priority, application Austria, May 13, 1980, 2564/80

Int. Cl.³ A61F *5/08*

U.S. Cl. 128—76 R **9 Claims**

1. A head gear manipulator for invalids, comprising a helmet, an arm carrying gripping means mounted on the helmet, electro-motor drive means operating the gripping means in response to muscle movements of an invalid wearing the helmet, wherein the helmet consists of a blank of thermoplastically deformable sheet material having a center portion and a plurality of arms radiating from the center portion, the arms

having free ends, and a longitudinally adjustable circular band mounted over the free arm ends and connecting the same, and



a mounting affixed to the center portion for holding the arm carrying the gripping means.

4,352,353

PROTECTIVE CLOTHING

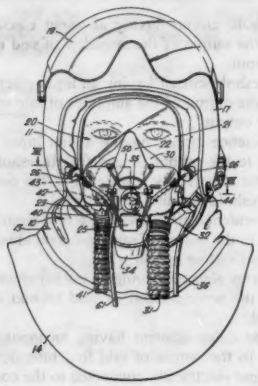
Colin B. Bolton, Fleet; Alan J. Miles, Camberley, and Robert E. Simpson, Fleet, all of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Continuation-in-part of Ser. No. 795,624, May 10, 1977, abandoned. This application Jan. 31, 1980, Ser. No. 116,028

Claims priority, application United Kingdom, May 14, 1976, 20135/76

Int. Cl.³ A61M *15/00*; A62B *18/00*

U.S. Cl. 128—201.24 **47 Claims**



1. A respirator for wearing beneath a protective helmet and for protection against an undesirable substance in a local atmosphere and comprising

a hood with a neck aperture and made of a flexible material,

a visor,

said hood and said visor both being made of material impervious to the undesirable substance and attached one to another in a manner impervious to the undesirable substance to form a respirator assembly adapted to envelop and fit closely the head of a wearer,

said visor having a transparent visual portion for covering the visual field of a wearer and a breathing mask carrying portion recessed to accommodate and carry a breathing mask,

a breathing mask carried by said visor mask carrying portion,

means mounted on said visor for supplying purge gas to the interior of said respirator,

means for directing purge gas onto said transparent visual portion,

means for permitting egress of purge gas, and

seal means around the neck aperture for preventing atmosphere exterior thereto reaching the interior of said respirator assembly via a neck aperture thereof.

4,352,354

WINGED RETENTION NEEDLE

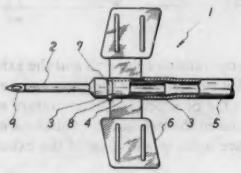
Yoshio Ujihara, Nara, Japan, assignor to Nissho Corporation, Osaka, Japan

Filed Mar. 4, 1981, Ser. No. 240,596

Claims priority, application Japan, Oct. 30, 1980, 55-155681[U]

Int. Cl.³ A61M *5/00*

U.S. Cl. 128—214 R **4 Claims**



1. A winged retention needle comprising

a hollow needle having a beveled edge at its tip,

a hub made of a hard synthetic resin material for fixing and supporting the base of the hollow needle, the head of the hub having a larger diameter than the remaining portion,

a winged supporting cylinder made of a flexible synthetic resin material for rotatably and frictionally supporting the hub inserted thereinto, the rear end portion of the hub protruding through the winged cylinder to provide a fitting portion to be inserted into a flexible tube, and

a means composed of a set of a groove and a pin movable in the groove for restricting the rotation of the hub such that the hub can only be rotated 180° in the circumferential direction and the edge surface faces up or down when the pin is positioned at either end of the groove.

4,352,355

DIAPER WITH CONTOURED PANEL AND CONTOURED ELASTIC MEANS

Frederick K. Mesek, and Virginia R. Mesek, both of Oak Forest, Ill., assignors to Johnson & Johnson Baby Products Company, New Brunswick, N.J.

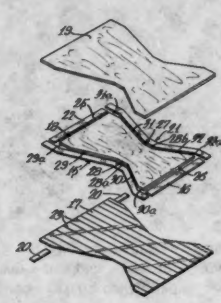
Continuation-in-part of Ser. No. 892,628, Apr. 3, 1978, abandoned. This application May 5, 1980, Ser. No. 146,838

Int. Cl.³ A61F *13/16*

U.S. Cl. 128—287 **4 Claims**

1. A disposable diaper comprising: a moisture pervious facing layer adapted to be positioned adjacent the skin of an infant, a moisture impervious backing layer secured to said facing layer, an absorbent batt positioned between said facing and backing layers, said batt being smaller than said facing and backing layers and spaced inwardly from the ends and sides thereof, said batt having a length dimension greater than its width dimension, the end portions of said batt being wider than an intermediate portion thereof and said intermediate portion being offset longitudinally toward one end of the batt, said batt having longitudinal side edges including parallel side edge segments defining said intermediate portion and further outwardly extending side edge segments from opposite ends of said parallel side edge segments terminating in still further parallel side edge segments extending from the ends of said outwardly extending side edge segments and terminating at the ends of said batt, said still further parallel side edge segments at opposite sides of said batt being spaced equally from the longi-

tudinal center line of the batt, said outwardly extending side edge segments forming straight lines at opposite sides of said batt being spaced equally from the longitudnal center line of the batt and disposed at an equal angle, whereby said batt is symmetrical about its longitudinal center line, and continuous



longitudinally extending elastic means secured at each side of the diaper immediately adjacent the batt and parallel to a respective said longitudinal side edge, whereby the sides of said diaper are gathered and said diaper has improved fit between the thighs when applied to an infant.

4,352,356

URINARY INCONTINENCE GARMENT

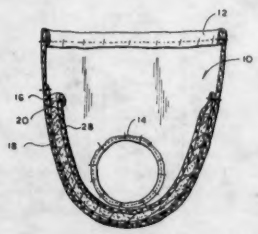
David P. Tong, Nuneaton, England, assignor to Humanicare International Inc., East Brunswick, N.J.

Filed Nov. 10, 1980, Ser. No. 205,105

Claims priority, application United Kingdom, Jan. 25, 1980, 8002635

Int. Cl.³ A61F *13/16*

U.S. Cl. 128—288 **35 Claims**



1. A urinary incontinence garment in the form of a brief or the like comprising a body portion with leg openings and a pouch connected to the interior of said body portion extending between said leg openings, said pouch being adapted to receive an absorbent urinary incontinence pad therein, said body portion comprising a knitted fabric, said fabric comprising interlocked courses of a staple fiber yarn and of a bulked continuous filament yarn.

4,352,357

TIMED DIATHERMOCAUTERY COMPRISING A TIMER UNAFFECTED BY DISTURBANCES OF ELECTROMAGNETIC ORIGIN

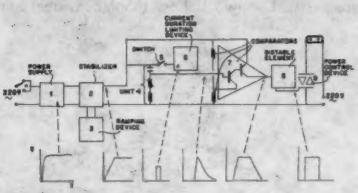
Sergio Capurro, Via Rimassa, 51, Genoa, Italy

Filed Jan. 16, 1980, Ser. No. 112,788

Claims priority, application Italy, Jan. 23, 1979, 12432 A/79

Int. Cl.³ A61B *17/39*

U.S. Cl. 128—303.13 **6 Claims**



1. The combination of a timing device and a diathermocautery apparatus for use on a patient and including a power supply in which power is selectively supplied to a load from said power supply, said apparatus having a switch movable between an operate position and a non-operate position, said timing device being immune to electromagnetic disturbances and comprising:

comparator means for establishing threshold levels of a timing voltage above which said power is supplied to said load;

timer means for supplying said timing voltage to said comparator means, said timer means comprising a series connected capacitance and resistance in parallel across said power supply; and

current duration limiting means for activating said timer means when said switch is moved to said operate position and for limiting the amount of time that said timing voltage is supplied to said comparator means when said switch is in said operate position and for providing a set time before which said timer means may be reactivated;

whereby said timer means may not be accidentally reactivated prior to said set time because of dirty or faulty switch contacts or because of vibrations, and whereby electromagnetic disturbances may not affect the timing device as in electronic timing devices of the integrated circuit type.

4,352,358

APPARATUS FOR EFFECTING ANASTOMOTIC PROCEDURES

Jean P. Angelchik, 1728 W. Glendale Ave., Phoenix, Ariz. 85021

Continuation of Ser. No. 107,765, Dec. 28, 1979, abandoned. This application Jun. 30, 1981, Ser. No. 279,205

Int. Cl.³ A61B *17/11*

U.S. Cl. 128—334 R **1 Claim**

1. Apparatus for use in effecting anastomotic procedures, to join a first hollow body member at an opening in its wall to a second hollow member and establish fluid communication therebetween, said apparatus comprising:

(a) a deformable annular member having a generally ring-shaped peripheral portion and a central opening therein and having at least two operative modes, including:

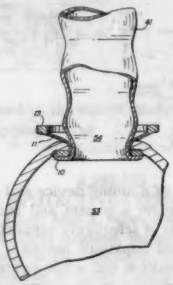
(i) a deformed mode in which said annular member is shaped to be inserted through the opening in the wall of said first hollow member and be completely received therewithin, and

(ii) a normal mode in which said annular member is shaped to be retained against the inner surface of said first hollow body member around the opening in the wall thereof;

(b) a second hollow tubular member having at least one open end, joined at said open end thereof to said annular mem-

ber and dimensioned, when said annular member is retained with said first hollow body member, to extend from the interior of said first hollow body member, from the central opening in said annular member, to the exterior of said first hollow body member, to provide fluid communication between the interior of said first hollow body member and the interior of said second hollow member;

(c) a liquid-impermeable tubular elastic membrane with an unbroken continuous side wall, disposed concentrically around said second hollow tubular member and having



one open end thereof attached to said annular member and dimensioned, when said annular member is retained within said first hollow body member, to extend from said annular member, through said opening in the wall of said first hollow body member, to the exterior of said first hollow body member; and

(d) means for radially tensioning said membrane to continuously sealingly engage the edge of the opening in the wall of said first hollow body member completely around the periphery thereof without suturing.

4,352,359

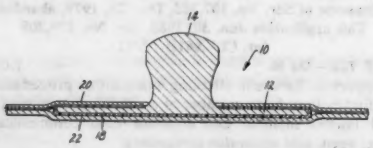
BIOMEDICAL ELECTRODE

Franklin C. Larimore, Shoreview, and Steven M. Heilmann, North St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 940,734, Sep. 8, 1978, abandoned, which is a continuation-in-part of Ser. No. 825,870, Aug. 19, 1977, abandoned. This application Jun. 2, 1980, Ser. No. 155,191

Int. Cl.³ A61B *5/04*

U.S. Cl. 128—640 **13 Claims**



1. In an essentially dry disposable biomedical electrode comprising an electrode plate having an upper surface and a lower body-contacting surface, said upper surface having means for electrically connecting said electrode plate to a lead wire, and a conductive material on said body-contacting surface of said electrode plate for enhancing electrical connection with the skin, the improvement wherein said conductive material comprises a dermally-nonirritating, conformable, cohesive, synthetic hydrophilic polymer containing at least 5 mole percent of monomer units containing a salt of a carboxylic acid, said electrode having an impedance of 500 Kohms or less at a frequency of 10 Hertz.

4,352,360

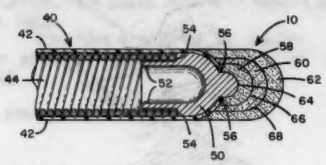
SEMICONDUCTOR LOW-THRESHHOLD ELECTRODE

Wendell L. King, North Oaks, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Mar. 30, 1981, Ser. No. 248,766

Int. Cl.³ A61N *1/04*

U.S. Cl. 128—786 **10 Claims**



1. A body implantable lead comprising:

a conductor having a proximal end and a distal end;

a sheath of body compatible material covering said conductor;

an electrical connector coupled to said proximal end of said conductor; and

an electrode coupled to said distal end of said conductor, comprising:

a metallic element of a metallic material coupled to said conductor;

a first intermediate element of a material having a resistivity greater than the resistivity of the material of said metallic element and less than 10^5 microohm cm, covering said metallic element; and

a distal element of body compatible material which is a semiconductor and has a resistivity in the range of 10^5 to 10^{10} microohm cm, covering said intermediate element.

4,352,361

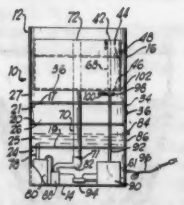
DENTAL APPLIANCE CLEANING DEVICE

Richard Chesler, 531 Main St., Roosevelt Island, N.Y. 10044

Filed Sep. 2, 1980, Ser. No. 183,226

Int. Cl.³ B08B *3/02*

U.S. Cl. 134—58 R **14 Claims**



1. A dental appliance cleaning device which consists of:

(a) a housing having an open top and at least one chamber therein;

(b) a receptacle insertable into said chamber of said housing, said receptacle capable of receiving at least one dental appliance therein;

(c) spray means for cleaning said dental appliance within said receptacle with a cleaning fluid, said cleaning fluid being in liquid contact with said dental appliance; and

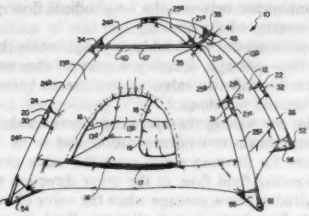
(d) means for rotating said receptacle within said housing.

4,352,362

TENT APPARATUS AND METHOD

Philip T. Nichols, P.O. Box 151362, Salt Lake City, Utah 84115

Filed Sep. 10, 1980, Ser. No. 185,710
Int. Cl.[3] A45F *1/16*
U.S. Cl. 135—3 E 20 Claims



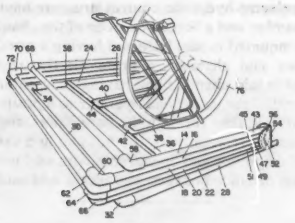
1. A tent comprising:
a fabric tent shell comprising a plurality of sidewalls, each sidewall joined to the adjacent sidewall in side-by-side relationship along a seam, and an integral floor structure joined to a lower edge of said sidewall;
web means mounted to the fabric tent shell;
a tab extending from the floor adjacent each web means, the tab being coplanar with the floor;
a foldable tent pole means secured to the web means;
coupling means for joining the upper ends of the tent pole means;
attachment means at the lower end of the tent pole means for attaching the tent pole means to each of said tabs; and
rib means extending transversely between each of adjacent said tent pole means, each of said rib means having sufficient length to bend said adjacent tent pole means outwardly.

4,352,363

COLLAPSIBLE BICYCLE STORAGE ASSEMBLY

Ralph A. Wilson, 29500-4 Heathercliff Rd., Malibu, Calif. 90265

Filed Aug. 11, 1980, Ser. No. 177,112
Int. Cl.[3] B62H *5/00;* B62J *19/00*
U.S. Cl. 135—7 6 Claims



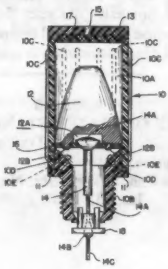
1. A collapsible bicycle storage assembly comprising:
a frame structure including at least one bicycle support means for supporting bicycles in the upright position;
lock means associated with said bicycle support means for locking said bicycles to said frame structure;
collapsible cover means mounted on said frame structure and movable between a collapsed position, and a covering position for entirely covering and protecting said bicycles;
said frame structure including a horizontal base having two outwardly extending legs mounted at right angles to at least one cross piece, with at least one of said cross pieces having said bicycle supports mounted thereon;
said collapsible cover means including a cover means for protecting the bicycles, a plurality of cover supports, each having a first end hinged to one of said base legs and a second end hinged to the other base leg by hinge means whereby said cover supports may be moved between said collapsed position where said cover supports are adjacent each other collapsed on said frame structure and a covering position where said cover supports are at spaced locations to support said cover over said bicycles;
said frame structure and cover supports being made from lightweight plastic pipe;
said plastic pipe being releasably connected together by press fittings which are standard plastic pipe connectors;
said cover means being formed of lightweight flexible plastic sheet material; and
said assembly including means for removably mounting said cover means on said cover supports.

4,352,364

NONSPILL VENTED CLOSURE ASSEMBLY FOR STORAGE BATTERY

Joseph A. Orsino, Diamond Bar; Ernest R. Sawyer, Solana Beach, and Ronald J. Hollet, Glendora, all of Calif., assignors to Concorde Battery Corp., West Covina, Calif.

Continuation of Ser. No. 80,441, Oct. 1, 1979, abandoned. This application Feb. 13, 1981, Ser. No. 234,358
Int. Cl.[3] F16K *17/36*
U.S. Cl. 137—43 1 Claim



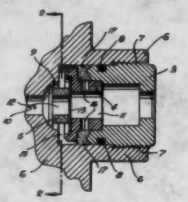
1. A nonspill closure assembly for a wet cell storage battery comprising: a casing having an orifice at one end thereof and forming an annular valve seat around the orifice; a cover mounted at the other end of the casing having a vent hole therein; a tiltable lead weight supported in said casing, said weight having a cavity formed in the bottom thereof; a disc mounted on the bottom of said lead weight enclosing said cavity, said disc having an opening therein of a diameter less than the diameter of the cavity; a valve stem having a ball-like member formed on one end thereof, said ball-like member being positioned in said cavity and supported on said disc, with the portion of said disc surrounding said cavity forming a bearing surface for the ball, and with the stem extending through the opening in the disc; a valve member mounted on said arm in position to be drawn against said annular valve seat when the lead weight tilts away from its vertical position; and an hydrophobic porous filter mounted in said casing adjacent to the underside of said cover to prevent any liquid from leaking through the vent hole in said cover.

4,352,365

PRESSURE VESSEL SAFETY VALVE

Hector O. M. Boccardo, Toorak, and Thomas W. Jolly, East Reservoir, both of Australia, assignors to The Commonwealth Industrial Gases Limited, Australia

Filed Oct. 27, 1980, Ser. No. 200,631
Claims priority, application Australia, Nov. 1, 1979, PE1165
Int. Cl.[3] F16K *13/04*
U.S. Cl. 137—68 R 3 Claims



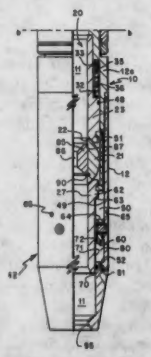
1. A safety valve for a pressure vessel having an exterior and an interior, said safety valve comprising a plug assembly having a first end and a second end and adapted to be mounted on a vessel in an opening with the plug assembly first end on the vessel interior and the plug assembly second end on the vessel exterior; means defining a first port and a second port in said plug assembly, said first port being in fluid communication with said plug assembly first end and said second port being in fluid communication with said plug assembly second end; means defining a first passage providing fluid communication between said first port and said second port; a first member positioned in said first passage to normally obstruct fluid flow therethrough and rupturable in response to a selected pressure arising inside the vessel to permit fluid flow through said plug assembly via said first passage; means defining a second passage providing fluid communication between said first port and said second port; and a second member positioned in said second passage to normally obstruct fluid flow therethrough and fusible in response to a selected temperature to permit fluid flow through said plug assembly via said second passage.

4,352,366

VELOCITY OPERATED STANDING VALVE

Ernest P. Fisher, Jr., Carrollton, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Feb. 5, 1980, Ser. No. 118,722
Int. Cl.[3] F16K *13/04*
U.S. Cl. 137—71 16 Claims



1. A valve for controlling fluid flow through a well flow conductor, comprising:

a. a housing;

b. means for securing the housing to the flow conductor;

c. a longitudinal flow passage extending through the housingl;

d. a valve closure means, disposed within the longitudinal flow passage, having a first position blocking fluid flow therethrough, a second position allowing fluid communication through the longitudinal flow passage and the valve closure means, and a third position allowing fluid to communicate between the longitudinal flow passage and the exterior of the housing;

e. an operating sleeve, slidably disposed within the longitudinal flow passage, forming a part of the valve closure means to shift the valve closure means between its first and second positions;

f. means for biasing the operating sleeve to shift the valve closure means to its first position; and

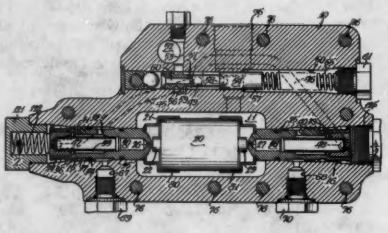
g. means for forming a seal with the valve closure means preventing fluid flow in the other direction through the longitudinal flow passage when the valve closure means is in its first position and allowing fluid to communicate between the longitudinal flow passage and the exterior of the housing when the valve closure means is in its third position.

4,352,367

ELECTRO-HYDRAULIC CONTROL STRUCTURE

Frederic W. Pollman, Ames, Iowa, assignor to Sundstrand Corporation, Rockford, Ill.

Filed Jul. 18, 1980, Ser. No. 170,084
Int. Cl.[3] F16K *31/04*
U.S. Cl. 137—82 14 Claims



12. An electro-hydraulic control structure having a housing with a chamber and a bore at one side of the chamber, a nozzle movably mounted in said bore and having a nozzle port opening toward said chamber, a linear electric motor movably positioned in said chamber and having an armature extendable from an end of the motor and operable to a position to control the rate of fluid flow through the nozzle port, and a coupler in non-contacting relation with the housing and extending from an end of the motor and engageable with said nozzle to maintain a fixed distance between said motor and said nozzle.

4,352,368

PLUMBING APPARATUS

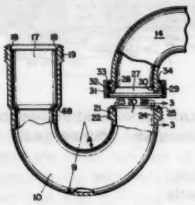
Gerald Landgarten, Framingham, Mass., assignor to Sanitary-Dash Manufacturing Company, Inc., North Grosvenor Dale, Conn.

Continuation-in-part of Ser. No. 865,972, Dec. 30, 1977, abandoned. This application May 4, 1981, Ser. No. 260,385
Int. Cl.[3] F16K *9/00*
U.S. Cl. 137—247.45 4 Claims

1. A tubular trap adapted to conduct liquids, interconnect an upstream, tubular, liquid-conducting member to a downstream, tubular, liquid-conducting member and retain a pool of trapped liquid when liquid is not being conducted therethrough:

said trap comprising a tubular structure having an inside and an outside surface and a generally U-shaped bend;

a first opening at one end; and
a second opening at the other end;
said first opening comprising a threaded outer annular rim having an inner annular bearing surface adapted to intimately contact a mating surface of an inlet opening of a downstream liquid conducting member; and an inner annular rim having an outer bearing surface adapted to intimately contact a mating surface of an inlet opening of a downstream liquid-conducting member; said inner bearing surface of said outer annular rim and said outer bearing surface of said inner annular rim together forming a generally V-shaped cross-sectional configuration;
said inner and outer annular rims of said first opening of said trap being situated with respect to one another as to permit said first opening of said trap member to be fastened to an inlet opening of a downstream member which comprises an annular inlet rim element having a diameter



between the largest diameter of said inner annular bearing surface of said outer annular rim and the smallest diameter of said outer annular bearing surface of said inner annular rim of said trap,
whereby intimate contact between the inner surface of the outer annular rim of the trap with a mating surface of the inlet opening of a downstream liquid-conducting member, and intimate contact between the outer surface of the inner annular rim of the trap with a mating surface of the inlet opening of a downstream liquid-conducting member provides a double seal against leakage when said first opening of said trap is fastened to the inlet opening of a downstream member;
said second opening of said trap comprising a threaded annular rim having a diameter equal to the diameter of the threaded annular rim of said first opening so that both threaded annular rims are adapted to be engaged by fastening means of the same size.

4,352,369

MIXING VALVE FOR LIQUIDS

Werner Lorch, Hammergraben 84/1, D-7230 Schramberg, Fed. Rep. of Germany

Filed Jan. 31, 1980, Ser. No. 117,415
Claims priority, application Fed. Rep. of Germany, Feb. 3, 1979, 2904131
Int. Cl.³ F16K *11/08*
U.S. Cl. 137—270 **18 Claims**

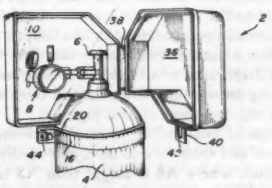
1. A mixing valve for liquids, comprising:
a spherical plug having two sets of openings, one set having an even number of said openings and the other set having an odd number of said openings, the openings communicating with one another through the plug;
a valve housing having a valve face adapted to the spherical plug;
means for connecting a discharge pipe and two intake pipes for the liquids to be mixed through the valve face, to at least two of the openings of the spherical plug;
an operating rod connected to the spherical plug by means of which the plug is pivotable for varying the quantity of the outflowing liquid and is rotatable about an operating rod axis for varying the mixing ratio of the inflowing liquids, the sets of openings of the spherical plug being arranged substantially on the same latitude of the plug with respect to the operating rod axis but on opposite sides thereof, the openings of each set being bilaterally symmetrical with respect to a plane of symmetry passing through the operating rod axis and at right angles to the pivot axis; and,
an intermediate area on the side of the spherical plug having the even number of openings, traversed by the plane of symmetry and bounded longitudinally by the innermost openings of the even numbered set, the intermediate area being wider longitudinally than the internal diameter of one of the intake pipes issuing into the valve housing, whereby in a first set of operating positions the even numbered set of openings are inlet openings and the odd numbered set of openings are outlet openings, and in a second set of operating positions the even numbered set of openings are outlet openings and the odd numbered set of openings are inlet openings, such that when the spherical plug is displaced by 180° about the operating rod axis, the directions of rotational movement necessary for changing the mixing ratio are reversed.

4,352,370

PRESSURE VESSEL VALVE HOUSING

Steve Childress, P.O. Box 853, Richland, Va. 24641

Filed Oct. 16, 1980, Ser. No. 197,478
Int. Cl.³ F16K *35/00*
U.S. Cl. 137—382 **1 Claim**



1. In combination a cylindrical pressure vessel having a valve on one end thereof, a housing for enclosing said valve, said housing comprising;
a strap embracing the cylindrical pressure vessel and comprised of two semi-cylindrical parts pivoted together at one end and having mating radially-outwardly extending ears on their other ends,
nut and bolt means for clamping said ears together,
a shell comprised of first and second mating shell parts, the first of said shell parts being affixed to one of the strap parts and extending upwardly therefrom, the second of such shell parts being pivotally attached to the first shell parts so as to swing between closed and open positions whereby to enclose and expose the valve,
the second of said shell parts having a projection rigid therewith and extending downward therefrom, said projection, in the closed position of said second shell part, being disposed in blocking position over the nut and bolt means such as to prevent unbolting thereof and in the open posi-

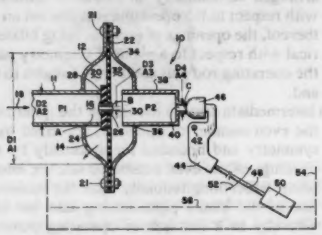
tion of such second said shell part being disposed in unblocking position with respect to said nut and bolt means, and lock means for releasably holding said second shell part in said closed postion.

4,352,371

LOW-HIGH FLOW RATE VALVE

William R. Walters, 910 W. Caddo, Cleveland, Okla. 74020

Continuation-in-part of Ser. No. 128,446, Mar. 10, 1980, Pat. No. 4,298,022. This application Apr. 8, 1980, Ser. No. 138,583
Int. Cl.[3] F16K *31/18*
U.S. Cl. 137—414 10 Claims



1. A float-operated valve for controlling the flow of liquid from a conduit carrying said liquid under pressure, P1, to a vessel, comprising:

(a) a conduit carrying said liquid, terminating in a first flange of selected diameter D1, having a first control opening of D2, where D1 is large compared to D2; a second opening in said first flange;

(b) a flexible diaphragm of diameter D1 adapted to be clamped over said flange and to cover said first opening; said diaphragm flexible enough to have its first surface pressed against said first opening to close off flow through said first opening;

(c) a first small orifice of selected diameter D3 through the center of said diaphragm and having an area A3, from its first surface to its second surface, where D3 is small compared to D2;

(d) a second flange adapted to be clamped over said second surface of said diaphragm to said first flange, enclosing said diaphragm in a liquid tight seal; said second flange having an opening, and attached over said opening is a first end of a short second pipe;

(e) a second small orifice of area A4 closing off the second end of said short second pipe, and rigidly attached to said conduit, where A4 is larger than A3 the inside of said second flange is opened to the atmosphere through said second small orifice;

(f) float-operated closure means to vary the area of said second small orifice as a function of liquid level in said vessel; and in which

(g) the effective area of said second small orifice comprises at least two positions; at least one of said positions extends outwardly from said valve farther than the at least other of said positions;

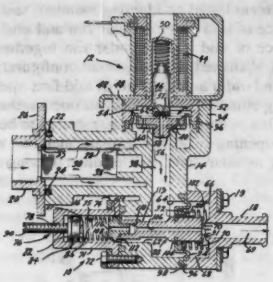
said elastomeric closure tip moves toward said second small orifice, responsive to the rising of said float, to first contact a first portion of said small orifice to define at least one of said positions and because of the compliance of said closure tip, it is indented into a contact face of said closure tip and is closed; and with further movement of said closure tip the contact face closes a second portion of said second small orifice to define said at least other position; and as said portions of said second small orifice are successively closed, the area of said second small orifice is progressively reduced, to zero.

4,352,372

PRECISION FLOW CONTROL DEVICE

Lawrence A. Kolze, Bensenville, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed Nov. 17, 1980, Ser. No. 207,110
Int. Cl.[3] G05D *7/01*
U.S. Cl. 137—504 21 Claims



1. A flow control device, said device comprising:

(a) housing means, said housing means including structure defining,

(i) a fluid inlet,

(ii) a fluid outlet,

(iii) a fluid chamber in fluid communication with said inlet and said outlet,

(iv) a pressure compensating chamber,

(v) a flow control orifice in the path of fluid flow from said fluid chamber to said fluid outlet;

(b) pressure responsive means movable disposed in said fluid chamber, said pressure responsive means including a valve member having an upstream portion in fluid communication with said compensating chamber, and a valve surface portion movable toward and away from said control orifice for throttling flow therethrough;

(c) first seal means dividing said fluid chamber into an upstream portion and a downstream portion;

(d) second seal means sealing between said valve member upstream portion and said pressure compensating chamber;

(e) said pressure responsive means further including means defining at least one flow restricting passageway for communicating fluid past said first seal means;

(f) means defining a passageway for communicating fluid pressure from said fluid chamber to said compensating chamber;

(g) means for biasing said valve member toward said control orifice; and

(h) said valve member movable in response to the net force from fluid flow therepast and said biasing means such that said valve surface portion is positioned relative to said control orifice for controlling flow therethrough to a predetermined rate.

4,352,373

DISC-REEL SOUND SUPPRESSOR

George Kay, Anaheim, and Alan Keskinen, Van Nuys, both of Calif., assignors to Vacco Industries, South El Monte, Calif.

Filed Aug. 21, 1980, Ser. No. 180,145
Int. Cl.[3] F16K *47/08*
U.S. Cl. 137—561 A 16 Claims

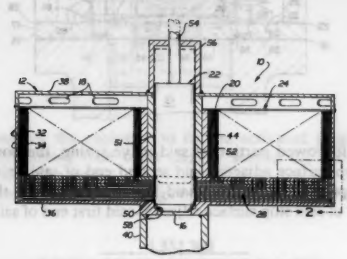
1. A sound suppressing fluid handling device for conducting a pressurized fluid relatively noiselessly through a substantial pressure drop, comprising:

a housing having fluid inlet and outlet ports and fluid passage communicating said ports;

a sound suppressing reel positioned within and laterally

spanning a longitudinal portion of said passage with the central axis of the reel aligned longitudinally of said passage portion comprising a relatively thin spiral, imperforate band having its adjacent turns disposed face to face laterally of said passage portion in fixedly spaced apart relationship to define laterally discrete passages between said adjacent turns; and

means integral with said band determining the spacing between said adjacent turns and forming a myriad of tortuous fluid energy dissipating flow paths extending through said discrete passages from one end of the reel to the other, said passages having inlet ends opening through the reel end adjacent said inlet port and outlet ends opening through the opposite reel end, whereby fluid flow occurs from said inlet port through said reel passages to said outlet passage port, and said means dissipate energy in said fluid to suppress cavitation noise and the like.

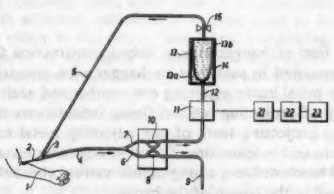


4,352,374

APPARATUS FOR DILUTING A CONCENTRATED SOLUTION

Ulf T. G. Nylen, Lund, Sweden, assignor to Gambro AB, Sweden

Continuation of Ser. No. 855,603, Nov. 29, 1978, abandoned.
This application Feb. 15, 1980, Ser. No. 121,873
Claims priority, application Sweden, Nov. 29, 1976, 7613374
Int. Cl.³ E03B 7/07
U.S. Cl. 137—564.5 **5 Claims**



1. Apparatus for use in the continuous analysis of a mixture of a minor amount of a concentrated solution dissolved in a major amount of a diluent comprising

a housing including adjacent first and second chambers separated from each other by a movable flexible wall membrane so that liquid in said first chamber cannot enter said second chamber, said second chamber including said diluent and said first chamber adapted to receive said mixture, said movable flexible wall membrane being adapted to move solely in response to said mixture being supplied to said first chamber so as to increase the volume of said first chamber and simultaneously decrease the volume of said second chamber, thereby expelling a proportionate amount of said diluent therefrom so that said diluent may be utilized to produce said mixture,

supply means for supplying said mixture produced from said diluent to said first chamber, the total amount of said diluent comprising a predetermined fluid amount,

concentrated solution supply means for supplying said concentrated solution at a predetermined rate,

mixing means for mixing said diluent expelled from said second chamber with said concentrated solution supplied by said concentrated solution supply means so as to provide said mixture to be supplied to said first chamber, and

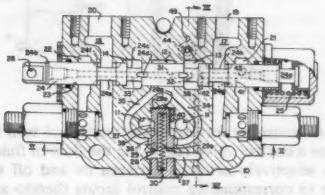
removal means for withdrawing a portion of said mixture from said supply means at a rate proportional to said predetermined rate, whereby said predetermined fluid amount remains substantially constant.

4,352,375

CONTROL VALVES

Arthur J. Williams, Youngstown, Ohio, assignor to Commercial Shearing, Inc., Youngstown, Ohio

Filed Apr. 14, 1980, Ser. No. 140,173
Int. Cl.³ F15B 13/08
U.S. Cl. 137—596.13 **16 Claims**



1. In a multiple section control valve bank, a control valve working section and an inlet section that are operatively connected to provide smooth proportional metering control over a wide band of operating pressures and simultaneous metering operation of two or more fluid actuated devices from a single fluid pressure source, said control valve working section having a pressure fluid inlet port, a pressure inlet chamber spaced from and connected to said inlet port, check valve means between said inlet port and inlet chamber, first and second work ports adapted to be connected to a fluid actuated device, first and second work chambers connected to said ports and spaced on opposite sides of said inlet chamber, first and second exhaust chambers on opposite sides of said work chambers from the inlet chamber, a pair of metering and logic chambers with one chamber on each side of the inlet chamber between the inlet chamber and the work chambers, a main bore extending through and interconnecting all of said chambers, a valve element movable in said bore from a neutral position to first and second work positions for selectively connecting said chambers and establishing fluid communication therebetween whereby in a work position fluid flows from the inlet port through said metering and logic chambers to one of said work ports, said inlet section having an inlet port adapted to be connected to a source of fluid pressure, an outlet port and chamber connected to said inlet port and to a valve section inlet port, an exhaust port, a spaced by-pass chamber connected to said exhaust port, and a signal chamber between said exhaust port and by-pass chamber, a bore extending through and connecting said chambers in said inlet section, a valve member movable in said bore between said signal chamber and said by-pass chamber effective to control fluid communicating from the inlet to the outlet port and being movable to a by-pass position by-passing fluid from the inlet through the by-pass chamber to said exhaust port, biasing means opposing the movement of said valve member to said by-pass position, a connection between said outlet port of said inlet section and said inlet port of said control valve section delivering fluid therebetween, logic means connecting the signal chamber of said inlet section and a metering and logic chamber of said control valve whereby the pressure in said signal chamber is

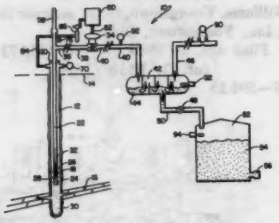
varied in accordance with the difference between the pressure in the inlet port of the inlet section and the fluid pressure at said metering and logic chamber to vary the biasing means opposing movement of said inlet section valve member whereby the flow of fluid from the inlet port to the outlet port of the inlet section is varied by by-passsing fluid.

4,352,376

CONTROLLER FOR WELL INSTALLATIONS

William L. Norwood, Columbus, Ohio, assignor to Logic Controls Corp., Converse, Tex.

Filed Dec. 15, 1980, Ser. No. 216,781
Int. Cl.³ F21B *34/16*
U.S. Cl. 137—624.15 45 Claims



35. A controller for use in the control of well installations wherein a control valve regulating the flow of fluid hydrocarbon is selectively actuated between on and off states in response to corresponding control inputs thereto and wherein operational parameter monitoring devices are actuable to provide external signals, comprising:

display means selectively energizable to provide visible digital characters representative of select components of time;

manual input means selectively actuable to provide numeric output conditions, each representing a number and further actuable to provide a delay output condition;

terminal means connectable for reception of said external signals as state change inputs;

control circuit means responsive to said manual input means numeric output conditions for deriving actuation signals defining selectively timed said on and off states, responsive to a said delay output condition and a subsequently asserted said numeric output condition to define a select delay interval;

said control circuit means being responsive to a said external signal state change input and to a delay output condition when occurring prior to said external signal for deriving a said actuating signal following an interval of time corresponding with said select delay interval; and

valve means responsive to said actuation signals to derive said control inputs.

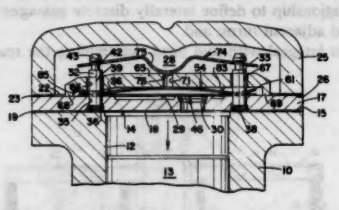
4,352,377

COMPRESSOR DISCHARGE VALVE

Jack F. Fritchman, Cullman, Ala., assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Jul. 27, 1981, Ser. No. 287,354
Int. Cl.³ F16K *15/14*
U.S. Cl. 137—851 9 Claims

1. A discharge valve for a refrigeration compressor comprising a valve plate defining a substantially flat, planar surface, a single discharge port in said valve plate, said port defining a valve seat coplanar with said valve plate surface, a flat, elongated valve reed having first and second ends, said valve reed being normally in contact with said valve plate surface and in sealing engagement with said valve seat, said valve reed being positioned so that said valve seat is closer to said second end that to said first end, a valve spring substantially coextensive with and overlying said valve reed, said valve spring being of sheet material with the middle portion being bowed upwardly away from said valve reed and with the ends in abutting engagement with said valve reed, and a stop member fixedly mounted with respect to said valve plate and having a stop surface overlying said valve spring and in abutting engagement



with said bowed portion of said valve spring, the portion of said stop surface adjacent said second end of said valve reed being spaced further from said valve plate surface than the portion of said stop surface adjacent said first end of said valve reed.

4,352,378

RIBBED CONSTRUCTION ASSEMBLED FROM SHEET METAL BANDS FOR IMPROVED HEAT TRANSFER

György Bergmann; Mihaly Horvath; György Palfalvi; Gabor Tomcsanyi; Gyula Kovacs, all of Budapest, and Kardy Laszlo, Jaszbereny, all of Hungary, assignors to TRANSELEKTRO Magyar Villamossagi Kulkereskedelmi Vallalat, Budapest, Hungary

Filed Jul. 16, 1980, Ser. No. 169,318
Claims priority, application Hungary, Jul. 16, 1979, EE 2679
Int. Cl.³ F28B *3/02*
U.S. Cl. 138—38 11 Claims

1. In a heat exchanger pipe, a ribbed construction for heat transfer mounted in said heat exchanger pipe comprising at least three metal bands adjoining one another and each having a plurality of projecting teeth defining indentations therebetween, the projecting teeth of one adjoining metal band extending into said indentations of another adjoining metal band, said metal bands defining a longitudinal central channel in said pipe extending the length of the bands.

4,352,379

PRESSURE VESSEL TUBE SEALING AND SUPPORT METHOD

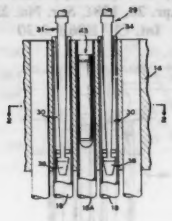
Gordon C. Larson, Lynchburg, Va., assignor to The Babcock & Wilcox Company, New Orleans, La.

Division of Ser. No. 784,993, Apr. 6, 1977, Pat. No. 4,290,543.
This application Apr. 20, 1981, Ser. No. 255,913
Int. Cl.³ F16L *55/18*
U.S. Cl. 138—97 4 Claims

1. A method for sealing a leaky tube disposed in a pressure vessel, the tube being one of a plurality of fluid conveying tubes whose ends are connected to tube sheet means arranged transversely within the pressure vessel, comprising the steps of:

inserting explosive activated plugs into the ends of the leaky tube,

inserting support plugs into the ends of tubes adjacent to the leaky tube,



detonating the explosive to fix the activated plugs to the surrounding tube walls thereby sealing the ends of the leaky tube, and

removing the support plugs from said adjacent tubes.

4,352,380

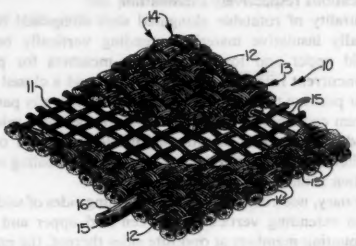
DECORATIVE SHEETING FABRIC

James G. Owen, and John M. Grimes, both of Eden, N.C., assignors to Fieldcrest Mills, Inc., Eden, N.C.

Filed Jul. 22, 1980, Ser. No. 171,250

Int. Cl.³ D03D *15/00, 15/06*

U.S. Cl. 139—426 R **13 Claims**



1. A decorative woven sheeting fabric characterized by having relatively open, sheer areas of an appearance contrasting with adjacent, substantially heavier areas to define a patterned effect in the fabric, said fabric comprising warp and weft yarns of corespun construction interwoven with one another to form a substantially uniform woven fabric construction of a weight of about 3.7 to about 4.4 ounces per square yard, each of said corespun warp and weft yarns having a continuous multifilament core portion and having a sheath portion formed of staple fibers helically wrapped about the core portion to substantially surround and encase the same, the portions of the corespun warp and weft yarns which extend throughout said sheer areas having the multifilament core portions thereof exposed and being substantially devoid of sheath fibers and thus being smaller than adjacent portions of the yarns in said heavier areas, and the sheer areas in said fabric thus being thinner than the adjacent heavier areas to provide further contrast with the adjacent heavier areas.

4,352,381

TOOL HEAD AND HANDLE INTERCONNECTION

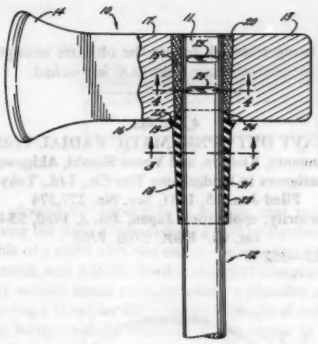
Michael A. Provi, Rockford, Ill., assignor to Dasco Products, Inc., Rockford, Ill.

Filed Aug. 25, 1980, Ser. No. 181,090

Int. Cl.³ B25G *3/34*; B21H *7/06*

U.S. Cl. 145—2 R **3 Claims**

1. In a tool having an elongated handle and a working head attached to one end portion of the handle, the combination of, a bore of preselected size extending through said head from the lower side thereof to the upper side, said end portion being smaller in cross section than said bore and projecting into said bore from said lower side of said head, a sleeve made of a resilient and flexible material and having a cross section generally similar to the cross section of said handle with the natural internal cross section of the sleeve being smaller than the cross section of said handle adjacent said end portion, said sleeve being stretched over said handle and disposed immediately below said end portion with the resiliency of the sleeve holding the latter in place on the handle, a flange formed on the upper end portion of said sleeve and having an upwardly facing surface engaging said lower side of said head and being larger than said bore around the entire periphery thereof to seal the lower end of the bore, an extension formed on said sleeve



above said flange and projecting into said bore, said extension being tapered upwardly and inwardly from a base portion adjacent said surface on said flange with the natural cross section of said base portion being larger than the cross section of said bore and with the cross section of the upper portion of the extension being smaller than the cross section of the bore, said base portion of said extension being compressed as said head is placed on said end portion with the lower side of the head abutting said upwardly facing surface on said flange, said surface and said base portion of said extension cooperating to position said head properly on said handle in both the horizontal and vertical planes and to center said end portion in said bore, and an adhesive filling the space in said bore around said end portion of said handle.

4,352,382

TIRE PROTECTION CHAIN

Erhard A. Weidler, Aalen-Unterkochen, Fed. Rep. of Germany, assignor to RUD-Kettenfabrik Rieger & Dietz GmbH u. Co., Aalen, Fed. Rep. of Germany

Filed Jul. 16, 1980, Ser. No. 169,435

Claims priority, application Switzerland, Jul. 26, 1979, 6907/79

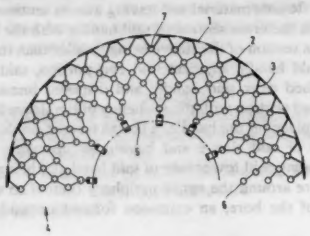
The portion of the term of this patent subsequent to Mar. 19, 1998, has been disclaimed.

Int. Cl.³ B60C *27/00*

U.S. Cl. 152—189 **8 Claims**

1. A tire protection chain with plate-shaped components which cover the tread of the tire to be protected and are connected, at least at their ends located on the outside of the tire, to a chain network including horizontal and vertical chain links covering the sidewall of the tire, the chain network **(4)** being provided with a number of overload safeguards **(7, 8, 9, 14, 18, 22)** which are located at points intended for some of the

horizontal or vertical chain links and form a parting seam which, when the chain network is overloaded, opens without



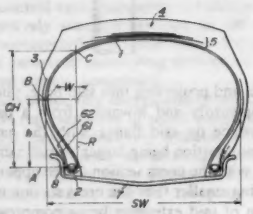
fragments being released, before the ultimate strength of the horizontal or vertical chain links (3,6) is reached.

4,352,383

HEAVY DUTY PNEUMATIC RADIAL TIRE

Kenji Matsumoto, Kodaira, and Yasuo Suzuki, Akigawa, both of Japan, assignors to Bridgestone Tire Co., Ltd., Tokyo, Japan

Filed Jun. 25, 1981, Ser. No. 277,374
Claims priority, application Japan, Jul. 2, 1980, 55-89257
Int. Cl.³ B60C *3/00, 9/08*
U.S. Cl. 152—352 R **1 Claim**



1. In a heavy duty pneumatic radial tire having a carcass consisting of at least one cord ply, which is arranged in the substantial radial plane of the tire, the outer periphery of said carcass being surrounded with a belt consisting of at least 2 metal cord layers, the cords of which are inclined at a relatively small angle with respect to the equatorial plane of the tire and crossed with each other, to reinforce rigidly just under the tread and to form a reinforced crown portion; and reinforced bead portions at both ends of the carcass, each of said reinforced bead portions being formed by turning up the end portion of the carcass ply around the bead core from the inside to the outside together with a rubber stock arranged between the bead core and the carcass ply; and said bead portions being assembled on a rim having a flange rising substantially perpendicular to the rotating axis of the tire, the improvement comprising said tire having, in its assembled state on the rim,

(a) a ratio of SW/CH being within the range of $1.6<SW/CH<2.0$, wherein SW is the maximum width of the carcass, and CH is the height of the intersecting point C of a radial line R, which contacts with the carcass in the inside of the bead core, with the carcass from a base line A, which passes through the center of the bead core in a direction parallel to the rotation axis of the tire; and

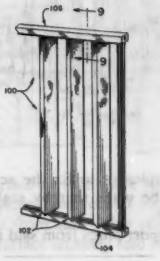
(b) a ratio of h/CH being within the range of $0.55<h/CH<0.61$, and a ratio of W/CH being within the range of $0.23<W/CH<0.28$, wherein h is the vertical distance of the maximum width point B of the carcass from the base line A, and W is the distance of the maximum width point B from the radial line R.

4,352,384

SLATTED WINDOW INSULATING INSERT

Oval O. McCoy, Jr., 4204 Manila, Jonesboro, Ark. 72401

Filed Apr. 20, 1981, Ser. No. 255,509
Int. Cl.³ E06B *9/30*
U.S. Cl. 160—172 **1 Claim**



1. A thermally insulative insert assembly adapted to be mounted within a window frame in spaced relation with respect to a window pane, the assembly comprising:

elongated, upper and lower pantograph mounting members adapted to be secured in generally parallel, spaced-apart relation within said window frame at top and bottom locations respectively therewithin;

a plurality of rotatable elongated slats comprised of thermally insulative material extending vertically between said upper and lower mounting members for pivotal, concurrent rotation between an open and a closed coplanar position thereby, the slats being of generally parallelogram cross section to permit rotation between said open and closed positions without interference with one another and to facilitate edgewise slat to slat sealing contact when rotated to said closed position;

stationary, non rotatable end slats forming sides of said insert and extending vertically between said upper and lower mounting members at opposite sides thereof, the end slats angularly adapted to contact the outermost angled edges of adjacent rotatable slats when said rotatable slats are moved to a closed position; and,

the slats, when in a closed position, forming a flat continuous surface spaced apart from the window mounted within said frame.

4,352,385

TILTER MECHANISM

Francis Vecchiarelli, River Edge, N.J., assignor to Hunter Douglas International, N.V., Curacao, Netherlands Antilles

Continuation-in-part of Ser. No. 43,696, May 30, 1979, abandoned. This application Jan. 21, 1980, Ser. No. 114,080
Int. Cl.³ E06B *9/38*
U.S. Cl. 160—177 **17 Claims**

1. A tilter mechanism for the slats of a venetian blind, said mechanism comprising, in combination:

(a) a housing;

(b) a bracket for mounting said housing to a venetian blind headrail;

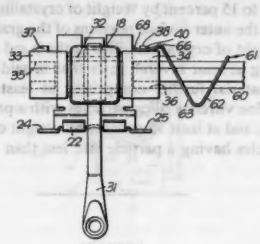
(c) an externally operable worm rotatably mounted on said housing;

(d) a wormwheel rotatably mounted on said housing in operative engagement with said worm;

(e) an axial extension at each axial end of said wormwheel;

(f) a blind recess in each extension adapted to receive the end

of a tilt rod, whereby the tilt rod can be selected to extend either to the left or to the right of said wormwheel;



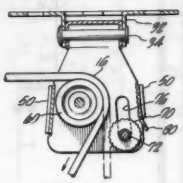
(g) engaging means on each of said extensions, each being engageable by a locking device to hold said tilt rod in place.

4,352,386

AUTOMATIC CORD LOCK DEVICE

John Butler, Long Beach; L. George Valle, Huntington Beach, and Donald E. Wall, Mission Viejo, all of Calif., assignors to Liken Home Furnishings, Westminster, Calif.

Filed Dec. 31, 1979, Ser. No. 108,343
Int. Cl.³ E06B 9/38, 9/324
U.S. Cl. 160—178 C **1 Claim**



1. A cord lock device having a housing, a first cylindrical roller and a pull cord trained about said roller with a substantially vertically hanging portion, comprising:

the housing including walls defining a pair of parallel facing elongated slots, said slot extending along a substantially straight-line path from an upper limit downwardly and outwardly of the vertically hanging cord to a lower limit;

a second roller having its end portions received within the respective housing slots, said end portions being of such dimensions as to permit rotating and sliding along the slots, and the central portion of the second roller being larger in cross-section than said end portions and having its peripheral surface formed to include a plurality of longitudinally extending raised ridges and when said second roller is located at the lowermost limit of the housing slots the raised ridges of said second roller contact the substantially vertically hanging portion of the pull cord; and

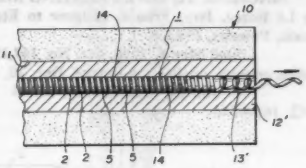
a wall mounted to the housing having a first surface facing the cord and extending substantially parallel to the slots straight-line path to a point spaced upwardly from the lowermost slot ends and a second surface integral with said first surface directed at an angle outwardly away from the first surface, said first and second surfaces including a set of teeth dimensioned to engage the raised ridges on the second roller whereby the second roller raised ridges securingly engages the cord and has the roller raised ridges received within the wall teeth throughout all positions of said second roller along the first wall surface, and on moving of the second roller downwardly to engage the teeth of the wall second surface the degree of engagement decreases until total disengagement occurs on the second roller being located at the lowermost positions of the slots.

4,352,387

PROCESS FOR PRODUCING A HOLLOW CAST PRODUCT

Shinjiro Yamaguchi, Kawaguchi, Japan, assignor to Sankyo Oilless Industry, Inc., Fuchu, Japan

Filed May 24, 1979, Ser. No. 42,130
Int. Cl.³ B22D 29/00
U.S. Cl. 164—132 **5 Claims**



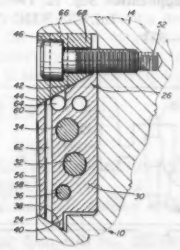
1. A process for producing a hollow cast metal product comprising the steps of positioning a hollow flexible mandrel in a crucible of a mold with one end of the mandrel extending out of the mold, said hollow flexible mandrel comprising a single helically wound metal strip including a plurality of windings each having a shoulder and a recess with the shoulder of each winding being partially received in the recess of the respectively adjacent winding to thereby define grooves between the windings, to provide a concavo-convex peripheral surface of the mandrel, filling the concaves in the peripheral surface of the mandrel up with casting sand to provide a smooth peripheral surface on the mandrel, introducing molten metal into said crucible of the mold and allowing the metal to solidify and removing said hollow flexible mandrel from said mold by pulling the mandrel at one end to thereby provide a hollow cast product.

4,352,388

DIE VENT FOR MOLD CAVITIES

Guido Perrella, Senneville, Canada, assignor to DBM Industries Limited, Lachine, Canada

Filed Apr. 29, 1981, Ser. No. 258,850
Claims priority, application Canada, Jan. 26, 1981, 369317
Int. Cl.³ B22D 17/20
U.S. Cl. 164—305 **1 Claim**



1. A device for venting a mold cavity comprising a body adapted for mounting in a die block and having an entrance end in communication with said mold cavity and an exit end open to the atmosphere to allow gas in said cavity to escape to the atmosphere when the cavity is being filled with casting metal or the like, said body comprising a plurality of vent strips joined together in face to face relation, each strip having a

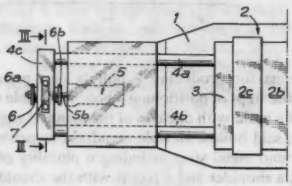
narrow portion along most of its upper edge to provide a plurality of longitudinal gaps extending substantially the length of said body; a longitudinal recess along each strip in communication with said gap and the entrance and exit ends of said body; and the upper surfaces of said strips having a progressively narrowing taper from the entrance end of the body to the end of the gaps between said strips, said taper providing a channel on the surface of the body to communicate with a similar channel in a die block in which the body is mounted.

4,352,389

DEVICE FOR THE ADJUSTABLE COUPLING OF AT LEAST ONE SIDE WALL OF A CHILL-MOLDING MACHINE TO ITS OPERATING MEMBER

Alain Le Bozec, Ivry, France, assignor to Etablissements A. Voisin, Puteaux, France

Filed May 6, 1980, Ser. No. 147,159
Claims priority, application France, Dec. 20, 1979, 79 31324
Int. Cl.[3] B22D *15/04, 17/26*
U.S. Cl. 164—343 2 Claims



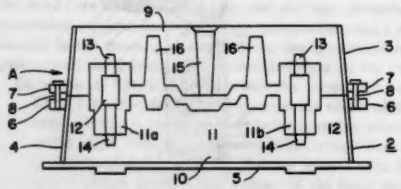
1. In a chill-molding machine having a support bed for the fixed and movable parts of the mold and a hydraulic jack the body of which is secured to the bed and having a rod for moving one of said movable parts with respect to said fixed parts, a device for adjustably coupling said one movable part to said hydraulic jack including a yoke secured to said one movable part, said yoke having a transverse part formed with an opening through which said jack rod extends for sliding movement relative to said transverse part of said yoke, a shoulder on said rod between said transverse part and the body of the jack, and a gripping clamp carried by said transverse part for immobilizing said rod with respect to the transverse part of the yoke.

4,352,390

PRECISION SILICA CONES FOR SAND CASTING OF STEEL AND IRON ALLOYS

David L. Larson, Chagrin Falls, Ohio, assignor to Sherwood Refractories, Inc., Cleveland, Ohio

Division of Ser. No. 966,070, Dec. 4, 1978, Pat. No. 4,236,568.
This application Sep. 12, 1980, Ser. No. 186,415
Int. Cl.[3] B22C *1/00*
U.S. Cl. 164—351 21 Claims



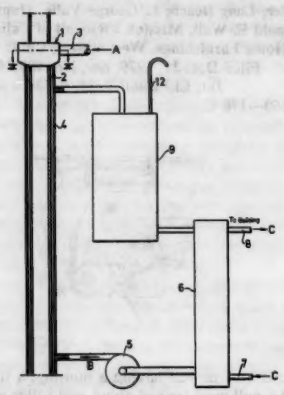
1. A hollow extruded and fired ceramic core for sand casting of ferrous alloys consisting essentially of refractory material and a mineralizer and having a modulus of rupture at 1500° C. of at least 60 kilograms per square centimeter and a porosity of 25 to 55 volume percent, said refractory material comprising 50 to 70 percent by weight of refractory silica grains with a particle size of 50 to 150 microns bonded together by insituformed crystalline silica, wherein said silica grains comprise at least 80 percent by weight of partially devitrified high-purity silica and 5 to 15 percent by weight of crystalline silica concentrated near the outer surface portions of the grains, the percentage by weight of crystalline silica in the bond region between grains being at least several times that in said grains, said refractory material further comprising at least 20 percent by weight of fine vitreous silica particles with a particle size up to 20 microns, and at least 15 percent by weight of the refractory silica particles having a particle size less than 10 microns.

4,352,391

METHOD AND APPARATUS FOR RECOVERING HEAT IN WASTE WATER

Kurt A. Jönsson, Nynäshamn, Sweden, assignor to Rederiaktiebolaget Nordstjernan, Stockholm, Sweden

Filed Jul. 8, 1980, Ser. No. 167,190
Int. Cl.[3] F24H *3/00*; F28F *9/02*
U.S. Cl. 165—1 5 Claims



1. A method of recovering heat from waste water from a building as it flow downwardly through a substantially vertically oriented waste pipe, comprising supplying a flowing medium to an inlet communicating with the outside of said waste water pipe, supplying incoming waste water to the interior of said pipe at a location in said pipe which is elevated relative to the location of said inlet of said flowing medium, said waste water supplying step including the step of forcing the incoming waste water toward the inner wall of said pipe for flow along a substantial circumferential portion of said inner wall to increase the transfer of heat from said incoming waste water through the wall of said pipe to the flowing medium outside of said pipe as said waste water flows downwardly along the inner wall of said pipe past said medium.

4,352,392

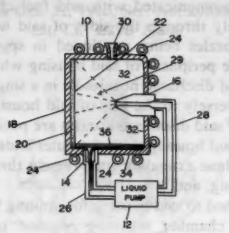
MECHANICALLY ASSISTED EVAPORATOR SURFACE

George Y. Eastman, Lancaster, Pa., assignor to Thermacore, Inc., Lancaster, Pa.

Filed Dec. 24, 1980, Ser. No. 220,020
Int. Cl.[3] F28D *15/00*
U.S. Cl. 165—104.25 5 Claims

1. An evaporative cooling system comprising:
a heat conductive capillary layer of less than three millimeters

in thicknesses to which heat is supplied for dissipation by evaporative cooling; and



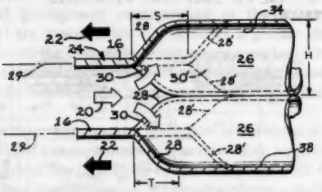
spraying means oriented to spray liquid upon and saturate the capillary layer with liquid.

4,352,393

HEAT EXCHANGER HAVING A CORRUGATED SHEET WITH STAGGERED TRANSITION ZONES

Gonzalo D. Vidal-Meza, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Sep. 2, 1980, Ser. No. 183,513
Int. Cl.³ F28C *1/00*
U.S. Cl. 165—166 **5 Claims**



1. In a heat exchanger (24) including a plurality of sheets (10) arranged in a stack (12), each of said sheets (10) including a centrally disposed corrugated portion (14) and first and second flattened edge portions (16,18) to facilitate flow of first and second fluid media (20,22) alternately between and generally longitudinally across said sheets (10), each corrugated portion (14) including a plurality of convolutions (26) individually having a transition zone (28) intermediate said corrugated portion (14) and each of said edge portions (16,18), the improvement comprising:

locating said transition zones (28) at different longitudinal positions transversely across said sheet (10) to define a plurality of staggered flow path ends (52,54) of a construction sufficient for reducing flow blockage of the fluid media (20,22) thereat.

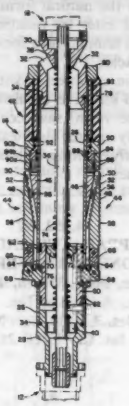
4,352,394

CABLE-SUSPENDED WELL PUMPING SYSTEMS

James N. Zehren, Bartlesville, Okla., assignor to TRW Inc., Cleveland, Ohio

Filed Aug. 1, 1980, Ser. No. 174,616
Int. Cl.³ E21B *33/128*
U.S. Cl. 166—106 **14 Claims**

9. A packer assembly for a well pumping system comprising a generally cylindrical packer housing, packing means carried exteriorly of said housing for cooperation with a well casing, said packing means including at least two circumferentially spaced axially movable slips and cooperating slip-body means fixed relative to said housing, said slips and said slip-body means having interengaging ramp surfaces for effecting radial expansion and contraction of said slips by axial movement of said slips on said slip-body means, means associated with said assembly for moving said slips on said slip-body means in a direction radially expanding said slips, and said packing means further including a resilient packing sleeve surrounding said housing, means fixing one end of said packing relativve to said housing, a collar means surrounding said housing and connected to the other end of said packing sleeve, said collar



means being axially movable relative to said housing, and means providing abutting contact between said collar means and said slips for moving said collar means in a direction axially contracting and radially expanding said sealing sleeve responsive to radial expanding movement of said slips on said slip-body means.

4,352,395

PROCESS FOR SELECTIVELY REDUCING THE PERMEABILITY OF A SUBTERRANEAN FORMATION

Robert D. Sydansk, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Nov. 28, 1980, Ser. No. 210,969
Int. Cl.³ E21B *33/138*
U.S. Cl. 166—292 **8 Claims**

1. A process for selectively reducing the permeability of at least one relatively highly permeable zone of a subterranean formation to improve vertical conformance and flow profiles of fluids injected into or produced from the subterranean formation, the formation being penetrated by a well bore in fluid communication therewith, the process comprising:

injecting via said well bore into said at least one relatively highly permeable zone in an environment near an injection surface, an aqueous solution having magnesium hydroxide suspended therein, said magnesium hydroxide significantly and relatively permanently reducing the permeability of said at least one relatively highly permeable zone.

4,352,396

METHOD FOR SELECTIVE PLUGGING USING RESIN EMULSIONS

Robert H. Friedman, Houston, Tex., assignor to Getty Oil Company, Houston, Tex.

Filed Nov. 20, 1980, Ser. No. 208,657
Int. Cl.³ E21B *33/138*
U.S. Cl. 166—295 **10 Claims**

2. A method for selectively plugging water-rich strata of a relatively high-temperature subterranean formation containing strata which are water-rich and other strata which are oil-rich, and said strata having at least one borehole therein, comprising:

providing an aqueous resin emulsion comprising a water-

insoluble, oil-soluble resin, an acid-sensitive emulsifier, a water-soluble first acid, and a water-soluble ester of a second acid, said second acid being a stronger acid than said first acid;

passing said emulsion into said borehole;

injecting said emulsion into said formation at a pressure sufficient to overcome the natural formation pressure;

hydrolyzing the said ester by reacting it with the first acid in-situ in said high temperature formation to form its corresponding second acid;

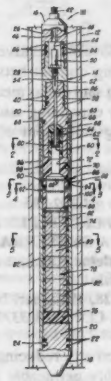
demulsifying the resin emulsion in-situ by reacting the second acid with the acid-sensitive emulsifier to effect subsequent coalescence of the resin, said coalescence product being effective to greatly reduce permeability of said water-rich strata, over a relatively long distance and over a relatively long period of time.

4,352,397

METHODS, APPARATUS AND PYROTECHNIC COMPOSITIONS FOR SEVERING CONDUITS

Glenn B. Christopher, Forth Worth, Tex., assignor to Jet Research Center, Inc., Arlington, Tex.

Filed Oct. 3, 1980, Ser. No. 193,856
Int. Cl.³ E21B *29/02*
U.S. Cl. 166—297 **54 Claims**



1. A method of severing a conduit along a plane extending transversely to the axis thereof comprising the steps of:

confining a solid gas-forming pyrotechnic fuel composition within a fuel chamber in an elongated housing sized for insertion in the conduit, said fuel composition comprised of a mixture of a metal selected from the group consisting of aluminum, magnesium, niobium, titanium and mixtures thereof, a metal oxide selected from the group consisting of ferric oxide, ferrous oxide, ferrosoferric oxide, cupric oxide, chromium trioxide and mixtures thereof and a gas-forming component which vaporizes to form a gas when heated to the temperature at which said metal and said metal oxide react when ignited, said housing including a plurality of spaced radially extending discharge nozzles communicated with said fuel chamber and positioned to direct fuel reaction products in directions transverse to the axis of said housing;

positioning said housing inside said conduit with said discharge nozzles thereof adjwacent the desired location of severance of said conduit; and

igniting the fuel composition confined in said fuel chamber so that reaction products formed therefrom exit said housing by way of said discharge nozzles and impact said conduit thereby severing said conduit.

42. Apparatus for severing a conduit in a plane extending transversely through the conduit comprising:

an elongated cylindrical housing adapted to be removably positioned within said conduit, said housing forming a fuel chamber therewithin and having a plurality of discharge nozzles communicated with said fuel chamber disposed transversely through the sides of said housing; said discharge nozzles being positioned in spaced relationship around the periphery of said housing wherein a first portion of said discharge nozzles lie in a single plane extending transversely to the axis of said housing and a second portion of said discharge nozzles are positioned obliquely through said housing with the outer ends thereof lying in a single plane extending transversely through the axis of said housing; and

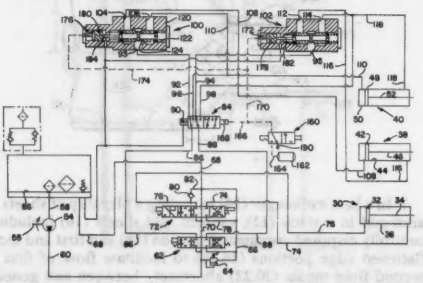
means attached to said housing for igniting fuel contained in said fuel chamber whereby reaction products formed therefrom exit said housing by way of said discharge nozzles.

4,352,398

CIRCUIT FOR PITCH AND TILT OF DOZER BLADE

Ronald K. Schantz, Libertyville, Ill., assignor to International Harvester Co., Chicago, Ill.

Filed Feb. 27, 1980, Ser. No. 124,875
Int. Cl.³ E02F *3/85*; F15B *11/22*
U.S. Cl. 172—812 **4 Claims**



1. In a tractor having a hydraulic circuit including a pump and a reservoir, and a dozer blade mounted on push arms with a pair of hydraulic rams having head and rod ends extending between the blade and each of said push arms, an improved control for pitching said blade comprising:

a directional control valve selectively connecting selected ends of said rams of said pump and reservoir for simultaneous extension or simultaneous retraction of the rams;

a first diverter-combiner spool valve interposed between said pump and reservoir and the head ends of said rams and operative to provide equal flow to said rams during extension thereof while combining the flow therefrom during retraction of the rams;

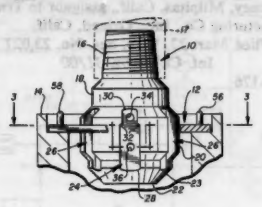
a second diverter-combiner spool valve interposed between said pump and said revervoir and the rod ends of said rams and operative to combine the flow from said rams during extension thereof and to provide equal flow thereto during retraction of the rams; and

a selector valve positioned downstream of said control valve, said selector valve having two positions, one in which communication of said pump and reservoir is achieved with both rams through said diverter-combiner valves and the other in which communication of said pump and reservoir is achieved with only one ram independently of said diverter-combiner valves.

4,352,399
BIT BREAKER AND HANDLE

Kenneth Davis, P.O. Box 7906, Midland, Tex. 79703

Filed Oct. 31, 1980, Ser. No. 202,687
Int. Cl.³ E21B 10/00
U.S. Cl. 175—315 9 Claims



1. In a drill bit for use in a rotary drilling rig, said bit having a main body which terminates in a formation engaging face at the lower end thereof and in a threaded fastener at the upper end thereof, said bit having a plurality of circumferentially spaced, external, outwardly opening passageways formed in said main body and communicating the lower end with the upper end of the bit, the combination with said bit of a bit breaker for making up and breaking out the threads of the bit with respect to the threads of a drill pipe;

said external passageways include spaced sidewalls which are joined to a bottom wall, said sidewalls of a marginal length of said passageway commencing at the lowermost end thereof are spaced from one another a greater distance respective to the sidewalls of the upper marginal terminal end of the external passageway thereby forming a shoulder at the sidewalls between the upper and lower marginal terminal ends;

said bit breaker has an outer perimeter in the form of a polygon which is of a complementary configuration respective to the geometrical configuration of the kelly drive of the rig, so that when the bit breaker is placed within the kelly drive of the rig, the rig turntable rotates the bit breaker about the central axis thereof;

said bit breaker has an axial passageway formed therethrough of a size to slidably receive said main body in a telescoping manner; a plurality of lugs affixed to said bit breaker and extending radially into the bit breaker axial passageway; said lugs being of a size to be received in close tolerance relationship within the lower marginal terminal end of said external passageway so that the lug abuttingly engages said shoulder and precludes further passage of the bit through the bit breaker;

whereby said bit breaker is placed within the kelly drive, said bit is seated within said bit breaker, so that the rotary table can turn the bit and bit breaker while a drill pipe is held stationary, to thereby enable the bit to be threadedly made up and broken out respective to the drill pipe.

4,352,400
DRILL BIT

Richard H. Grappendorf, Riverton; Gordon G. Sirrine, and John S. Davis, both of Sandy, all of Utah, assignors to Christensen, Inc., Salt Lake City, Utah

Filed Dec. 1, 1980, Ser. No. 211,884
Int. Cl.³ E21B 10/48, 10/54, 10/56
U.S. Cl. 175—330 11 Claims

1. A rotary drill bit comprising:

a body of predetermined axial length and maximum diameter with opposite cutting and drive ends rotatable about a central longitudinal axis thereof including:

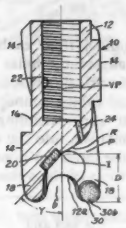
a plurality of relatively strong short stubby spiral finger like portions with leading and trailing sides thereon angularly spaced about the central longitudinal axis and an internal core receiving bore of relatively short axial depth adjacent the cutting end of the body and the finger like portions,

a plurality of reinforcing web portions extending circumferentially and away from the cutting ends on trailing sides of the spiral finger like portions,

a plurality of angularly spaced overlapping outer spiral stabilizer lands including leading and trailing spiral side edges and surfaces extending exteriorly and helically opposite to direction of bit rotation substantially the axial length of the body between the opposite cutting and drive ends thereof,

a plurality of angularly spaced spiral grooves extending between the spiral lands and connected to the short internal core receiving bore,

an inclined core ejection passage including an inclined internal surface extending radially outwardly and inclined toward the opposite drive end of the body from a closed inlet end adjoining an inner surface portion of



a spiral finger portion and the central core receiving bore to an opposite outlet end connected with a spiral groove and situated between a pair of adjacent spiral finger like portions, and

connecting means adjacent the drive end of the body adapted for attaching means to rotatably drive the drill bit,

preformed cutting elements attached to support surfaces on the leading sides of the spiral finger portions and each having

a back side adjacent a support surface and a cutting side including a cutting edge opposite the back side, and

a preformed hard core cutter element fixed within a pocket provided at the closed inlet end of the core ejection port and having an inclined cutting edge diverging from a point thereof situated adjacent an intersection of the inclined internal surface of the core ejection passage and plane of the longitudinal axis of the body.

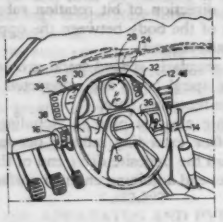
4,352,401
MOTOR-CAR CONTROL GROUP

Massimo Vitaloni, Rivalta, Italy, assignor to Viel Elettromeccanica S.p.A., Chiusa S. Michele, Italy

Filed Nov. 29, 1979, Ser. No. 98,580
Claims priority, application Italy, Nov. 30, 1978, 53941/78[U]; Feb. 13, 1979, 52948/79[U]; Feb. 13, 1979, 52949/79[U]; Feb. 13, 1979, 52950/79[U]; Sep. 14, 1979, 53565/79[U]; Sep. 14, 1979, 53566/79[U]; Nov. 12, 1979, 53739/79[U]
Int. Cl.³ B60R 16/02
U.S. Cl. 180—90 33 Claims

1. A control group for auxiliary services of a motor vehicle, including at least one elongate control assembly and a support structure connected to one end of the control assembly and attachable to a structural part of the vehicle, in use, to support the control assembly so that the latter extends into a zone immediately behind the steering wheel rim, the control assembly including manual controls for the auxiliary services, at least some of said manual controls including rotatable rings, wherein the control assembly includes a central tubular sup-

port element which extends along the axis of elongation of the assembly and which has a longitudinal slit, one end of the tubular support element being carried by the support structure and at least one of said control rings being mounted for rotation on the tubular support element and about the axis of the latter, and wherein the control assembly further includes at least one annular element fixed to the tubular support element,



one adjacent each control ring, each annular element and adjacent ring having adjacent annular faces and carrying respective cooperating electrical contacts on said adjacent annular faces, and electrical cables connected to the contacts of each annular element and extending from said contacts, through said longitudinal slit, into the central tubular support element and through the latter for connecting the contacts to control respective services of the vehicle.

4,352,402

SAFETY CIRCUIT FOR AN APPARATUS FOR REGULATING THE TRAVELING SPEED OF A VEHICLE

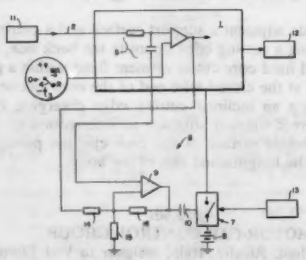
Harald Collonia, Glashütten, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Fed. Rep. of Germany

Filed Jun. 19, 1980, Ser. No. 160,866

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1979, 2925580

Int. Cl.³ B60K *31/00*

U.S. Cl. 180—170 **7 Claims**



1. In a speed control system for a vehicle, comprising means (11) for generating a signal dependent on vehicle speed, an engine throttle control device (12), speed regulator means (1) connected to the signal generating means and the control device for regulating vehicle speed, a vehicle brake device (13), disconnect memory means (7) connected to the brake device and the regulator means for interrupting vehicle speed regulation by the regulator means in response to actuation of the brake device, and threshold switch means (6) connected to the disconnect memory means for preventing said vehicle speed regulation under control of said vehicle speed dependent signal, the improvement residing in means (5) connected to the regulator means for transforming the speed dependent signal into an acceleration dependent signal applied to the threshold switch means, said threshold switch means including amplifier means (9) to which said acceleration dependent signal is applied for disabling the regulator means in response to vehicle acceleration in excess of a predetermined threshold value, until reset.

4,352,403

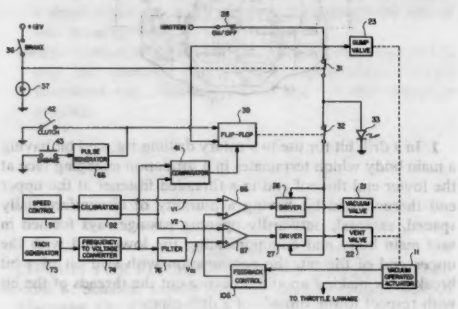
VEHICLE SPEED CONTROL SYSTEM

Charles F. Burney, Milpitas, Calif., assignor to Travel Accessories Manufacturing Co., Inc., Orland, Calif.

Filed Mar. 22, 1979, Ser. No. 23,027

Int. Cl.³ B60K *31/00*

U.S. Cl. 180—176 **17 Claims**



1. In a system for controlling the speed of a vehicle having throttle and brake controls: means for providing an input signal which varies cyclically in amplitude about a DC level which corresponds to the speed of the vehicle, said signal lying in a predetermined range between first and second reference levels when the vehicle is moving at a desired speed and extending outside said range when the vehicle speed differs from the desired speed, said range being wider than the amplitude variations of the input signal, and the portion of an input signal cycle during which the input signal is outside the predetermined range varying in accordance with the speed of the vehicle and increasing as the DC level approaches one of the reference levels, means for sensing when the input signal is outside the predetermined range, and means connected to the throttle control for adjusting the vehicle speed toward the desired speed when the input signal is outside the predetermined range, the amount of adjustment increasing as the vehicle speed moves farther from the desired speed and decreasing as the vehicle speed approaches the desired speed.

4,352,404

DEVICE FOR THE CONTROL OF THE TRAVELING SPEED OF A MOTOR VEHICLE

Bernhard Stier, Kelkheim-Fischbach, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 9, 1979, Ser. No. 82,826

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1978, 2844829

Int. Cl.³ B60K *31/00, 41/20*

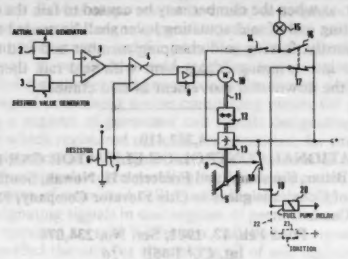
U.S. Cl. 180—179 **7 Claims**

1. In a device for the control of the traveling speed of a motor vehicle with an electrical controller having a first input connected to an actual speed signal generator, a second input connected to a settable desired speed signal generator, and an output stage which contains a servomotor in operative connection with an element, preferably the throttle valve, which element influences the ratio of the fuel-air mixture that is supplied to the vehicle engine, the output stage being electrically connected to a first switch which is coupled to the foot brake to switch into an inoperative condition if the foot brake is actuated, the improvement comprising

a second switch actuatable by means of the foot brake,

a third switch in operative connection with said element,

an electrical control means for influencing the rotational speed of the vehicle engine, said electrical control means being electrically actuatable by said second switch and



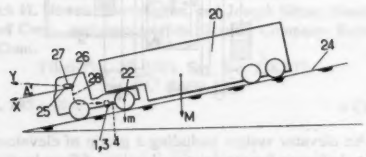
said third switch in the sense of a reduction of the rotational speed of the engine if the brake is actuated and the element is outside of the idling position.

4,352,405

CONTROL DEVICES FOR SPEED REDUCERS

Andre Marandet, Saint-Gratien, France, assignor to Labavia - S.G.E., Paris, France

Filed Mar. 31, 1980, Ser. No. 135,287
Claims priority, application France, Apr. 10, 1979, 79 09098
Int. Cl.³ B60T *8/014*
U.S. Cl. 180—282 **6 Claims**



1. A control device for a speed reducer adapted to brake an axle of a heavy vehicle, comprising means for automatically neutralizing at least partially the speed reducer when the deceleration of the empty or lightly loaded vehicle exceeds a predetermined threshold beyond which the wheels of said axle risk skidding, these neutralization means being arranged so as to use the inertial movements of a mass carried by the vehicle and responsive to the deceleration of this latter, wherein said mass is arranged and mounted so as to be able to move along a ramp whose mean line, rising towards the front of the vehicle, is disposed in a longitudinal vertical plane of this vehicle and is inclined with respect to the longitudinal axis thereof by an acute angle A substantially such that $A = \text{Arctan}([m/M]tg\ \alpha)$, in which formula M is the total unladen mass of the vehicle, m the unladen mass applied to the axle braked by the speed reducer and tg α the coefficient of adhesion between the wheels of said axle and the ground.

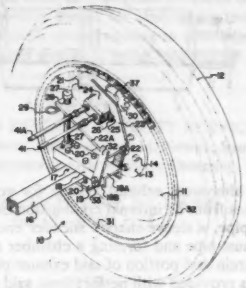
4,352,406

SELECTIVELY ENGAGEABLE AND DISENGAGEABLE DRIVE FOR WHEELED DEVICES SUCH AS GRAIN AUGERS OR THE LIKE

Anthony Fahrenschon, No. 10 Highway East, Swan River, Manitoba, Canada (R0L 1Z0)

Filed Aug. 4, 1980, Ser. No. 175,145
Int. Cl.³ B60K *7/00*
U.S. Cl. 180—308 **11 Claims**

1. Selectively engageable drive means for a ground engaging wheel mounted upon an axle component and comprising in combination a support bracket, a source of power mounted on said bracket, means rotatable by said source of power, further means on said ground engaging wheel selectively engageable and disengageable with said means rotatable by said source of power, to selectively drive said ground engaging wheel, and means mounting said bracket to said axle component for selective engagement and disengagement of said means rotatable by said source of power, to said further means on said ground engaging wheel, said means mounting said bracket to said axle including means whereby said bracket and said source of power can be raised and lowered relative to said axle component, to engage and disengage said source of power with said



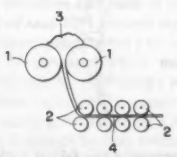
ground engaging wheel, said means mounting said bracket to said axle component including a vertically situated, fixed member mounted upon said axle component, said bracket being mounted for slidable vertical movement upon said fixed member and lock means selectively engaging with said fixed member to detachably lock said bracket in the uppermost position with said source of power operatively engaging said ground engaging wheel, said fixed member comprising a shaft, said bracket being journalled upon said shaft for said vertical movement and also for pivotal movement in a substantially horizontal plane, and means detachably restraining said bracket from said pivotal movement.

4,352,407

DIAPHRAGMS FOR ACOUSTIC INSTRUMENTS AND METHOD OF PRODUCING THE SAME

Tsunehiro Tsukagoshi; Shinichi Yokozeki; Toshikazu Yoshino, and Yasuyuki Arai, all c/o Pioneer Electronic Corporation Ohmori Factory, No. 4-15-5, Ohmori-nishi, Ohta-ku, Tokyo, Japan (143)

Filed Sep. 24, 1979, Ser. No. 78,045
Claims priority, application Japan, Sep. 29, 1978, 53-120283
Int. Cl.³ G10K *13/00*
U.S. Cl. 181—167 **13 Claims**



2. An acoustic diaphragm formed of a homogeneous composite material consisting essentially of a thermoplastic resin and graphite powder particles, the graphite powder particles being substantially parallel oriented in said diaphragm.

4,352,408

DEVICE FOR CONDUCTING AWAY THE EXHAUST GASES FROM INTERNAL COMBUSTION ENGINES

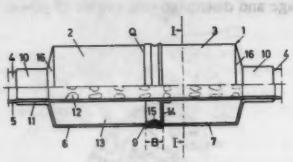
Jean Hardt, Benken, and Jakob Widrig, Winterthur, both of Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Jun. 2, 1980, Ser. No. 155,458

Claims priority, application Switzerland, Jun. 6, 1979, 5250/79

Int. Cl.³ F01N *1/02*

U.S. Cl. 181—249 1 Claim



1. An aluminum exhaust system for conducting away exhaust gases from an internal combustion engine comprising an exhaust pipe, a sleeve-shaped silencer enclosing a portion of said exhaust pipe and forming a chamber around said exhaust pipe wherein said portion of said exhaust pipe enclosed by said silencer is provided with perforations, said silencer having two sleeve-shaped parts joined together, said sleeve-shaped parts being provided on one end thereof with collars for fitting said sleeve-shaped parts on said exhaust pipe and on the other end thereof with locking means for joining said sleeve-shaped parts together, said locking means comprises a profiled shape extending around the circumference of said sleeve-shaped parts wherein the profiled shape on one of said two sleeve-shaped parts is telescopically received in the profiled shape on the other of said two sleeve-shaped parts such that said sleeve-shaped parts are joined together radially to their longitudinal axis.

4,352,409

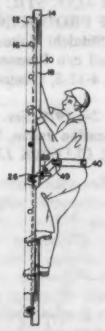
CLIMBING SAFETY DEVICE

Cecil D. Fountain, 8403 Jackson Springs Rd., Tampa, Fla. 33615

Filed Jan. 21, 1981, Ser. No. 226,802

Int. Cl.³ E06C *5/36;* A62B *1/16;* E06C *7/18;* F16G *11/00*

U.S. Cl. 182—8 20 Claims



1. A device for arresting the fall of a climber ascending or descending along a vertically disposed rail comprising a support member having an opening therein for receiving said rail therethrough, a clamping member supported on said support member and engageable with a vertical surface of said rail in clamping relation therewith, at least one connecting link pivotally connected to said support member, and an actuating lever pivotally connected to said connecting link, said actuating lever having one end thereof engageable with said clamping member and an opposite end thereof connectable to said climber where upon a sudden downward movement of said climber, as when the climber may be caused to fall, the climber connecting end of said actuating lever shall be caused to pivot downwardly, forcing said clamping member and said support member into gripping engagement with said rail, thereby arresting the downward movement of said climber.

4,352,410

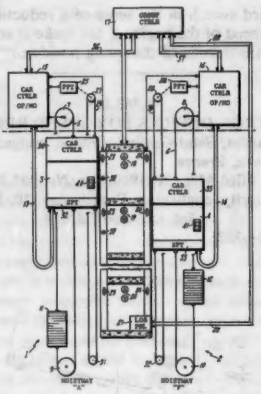
OPERATIONAL CONTROL OF ELEVATOR CAR CALLS

Joseph Bittar, Simsbury, and Frederick H. Nowak, Southington, both of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Feb. 13, 1981, Ser. No. 234,076

Int. Cl.³ B66B *1/16*

U.S. Cl. 187—29 R 2 Claims



1. An elevator system including a group of elevators movable in shaftways for servicing a plurality of floor landings in a building, comprising:

group controller means for providing group demand controlling signals to said elevators to cause said elevators to move to selected landings;

each of said elevators including:

a car disposed for movement in the related one of said shaftways, a car call panel disposed in said car and having passenger-actuable means for providing car call button signals indicative of landings at which elevator stops are requested by passengers and indicator means for providing visual indication of landings for which car calls have been requested, and signal processing means for providing registered car call signals in response to said car call button signals;

car motion means for providing and arresting motion of said car;

a car controller, disposed in said building, interconnected with said car and with said car motion means for providing signals to said car motion means to cause movement of said car to landings indicated by said registered car call signals and said group demand controlling signals;

characterized by

said group controller means comprising means for providing special service signals to each of said elevators and for providing modified service signals to each of said elevators, said service signals designating landings corresponding thereto;

said car controller means comprising means for providing inhibit car call buttons signals in response to said special service signals provided thereto by said group controller

means, for providing a floor reset signal indicative of said car motion means bringing said car to a landing for a service stop thereat, for providing a reset all car calls signal and force car calls signals, indicative of landings at which service stops are to be made, in response to said special service signals provided thereto by said group controller means, and for providing group car call inhibit signals in response to said modified service signals provided thereto by said group controller means; and

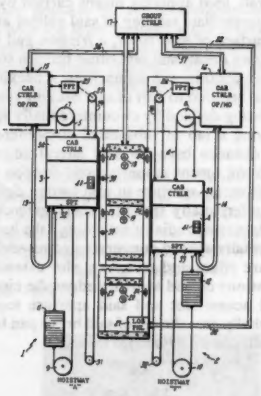
said signal processing means comprising means for providing a register of permitted call signals designating floors for which registered car calls are permitted, for providing registered car call signals in response to ones of said call button signals corresponding to floors designated in said register of permitted call signals, for eliminating all floor designating signals in said register of permitted call signals in response to said inhibit car call buttons signal being provided thereto, for eliminating all of said registered car call signals in response to said reset all car calls signals, for eliminating ones of said registered car call signals corresponding to floors at which a service stop is to be made as indicated by said floor reset signal, for providing registered car call signals corresponding to floors designated by said force car calls signals, for providing a register of inhibit car call signals in response to said group car call inhibit signals, for eliminating selected ones of said registered car call signals in response to said register of inhibit car call signals, and for providing said registered car call signals, as modified in response to said reset all car calls signals, said floor reset signal, said force car calls signals, and said inhibit car call signals, to said car controller and to said indicator means.

4,352,411

ELEVATOR FLOOR CUTOFF

Frederick H. Nowak, Southington, and Joseph Bittar, Simsbury, both of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Feb. 13, 1981, Ser. No. 234,077
Int. Cl.³ B66B *1/18*
U.S. Cl. 187—29 R **3 Claims**



1. An elevator system including a group of elevators movable in shaftways for servicing a plurality of floor landings in a building, comprising:

group controller means for designating one or more specific elevators which are to be excluded from providing service to selected cutoff floors and for providing floor cutoff signals indicative thereof to each one of said specific elevators;

each elevator including a car, a car call panel having passenger-actuable means for providing car call button signals indicative of landings at which elevator stops are requested by passengers and for providing visual indications to the passengers of landings for which car calls have been requested, motion means for moving and stopping said car in the related shaftway for servicing the landings, and signal processing means interconnected with said motion means and responsive to said car call button signals for providing registered car call signals, and for providing signals to said motion means to cause movement of said car to landings corresponding to said registered car call signals;

characterized by:

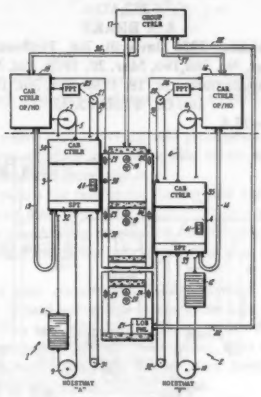
each of said signal processing means comprising means responsive to said floor cutoff signals provided thereto by said group controller means for eliminating those registered car call signals corresponding to floors designated by said floor cutoff signals as being inaccessible.

4,352,412

ELEVATOR EXPRESS PRIORITY SERVICE

Joseph Bittar, Simsbury, and Frederick H. Nowak, Southington, both of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Feb. 13, 1981, Ser. No. 234,080
Int. Cl.³ B66B *1/18*
U.S. Cl. 187—29 R **8 Claims**



1. An elevator system having a plurality of elevators movable in respective shaftways between a plurality of floor landings in a building for servicing said landings, comprising:

a plurality of request means, each corresponding to one of said landings, each selectively actuable for providing an EPS request signal indicative of a request for express priority service to said corresponding one of said landings;

a group controller, interconnected for signal communication with each of said elevators and each of said request means, for registering all of said EPS request signals, and cyclicly operable in a repetitive sequence for providing available cars signals indicative of elevators which may be assigned to respond to EPS requests, for providing a plurality of landing signals in a repetitive, successive sequence from a first landing through a last landing, for assigning a selected one of said elevators which is indicated by said available cars signals as being available, to respond to one of said EPS calls by providing EPS assignment signals, indicative of the one of said elevators so assigned and the landing of the EPS request, in response to said available cars signals, said EPS signals and said landing signals, and for communicating said EPS assignment signal to the elevator indicated thereby;

each of said elevators including means responsive to said EPS

assignment signals provided thereto by said group controller to proceed to the landing designated thereby to service said landing;

characterized by:

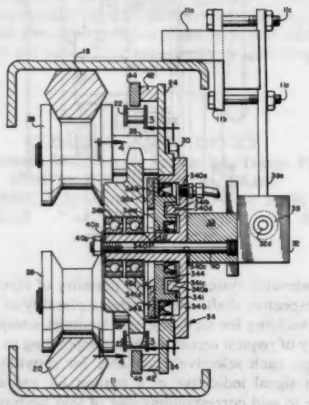
said group controller means comprising means for providing, in each cycle, a next landing signal indicative of the landing in said sequence in response to which said EPS assignment signal is to be provided first in said subsequent cycle, for iteratively, in each cycle, testing the EPS signal for one or more landings beginning with the landing designated by said next landing signal and proceeding with successive landings in said sequence, either to said last landing in cycles of a first condition in which there is no EPS signal, for any landing from the one designated by said next landing signal to said last landing, for which there is no concurrent available car signal, or, in cycles of a second condition to a landing for which there is a corresponding EPS request signal concurrently with no available car signal, for providing said assignment signals for any EPS request signal tested in cycles of said first condition, for providing said next landing signal to designate said first landing after testing for said last landing in cycles of said first condition, and for providing said next landing signal to designate the next landing in said sequence subsequent to the one for which an EPS request cannot be assigned for lack of an available car, after testing for such landing in cycles of said second condition.

4,352,413

AIR BRAKE

Joseph F. Weishew, 3934 Davisville Rd., Hatboro, Pa. 19040

Division of Ser. No. 888,190, Mar. 20, 1978, Pat. No. 4,227,421.
This application Apr. 18, 1980, Ser. No. 125,760
Int. Cl.³ F16D *55/12*
U.S. Cl. 188—72.4 **1 Claim**



1. A fluid operated brake comprising:

a cylinder provided with

an axially extending hub,

two cylindrical bosses each of which extends parallel to said hub and each of which is radially spaced from said hub along a common diameter, and

a fluid port;

a cylindrical piston which is arranged to be carried by said hub and said bosses and which is provided with

a central aperture through which said hub extends,

two cylindrical recesses each of which extends parallel to said aperture and each of which is radially spaced therefrom along a common diameter and into each of which a respective one of said bosses extends,

a first annular groove radially spaced a first distance from said aperture, and

a second annular groove radially spaced a second distance from said aperture;

a first annular fluid seal within said first annular groove which seal engages a surface of the hub and a surface of the piston;

a second annular fluid seal within said second annular groove which seal engages a surface of the cylinder and a surface of the piston; and

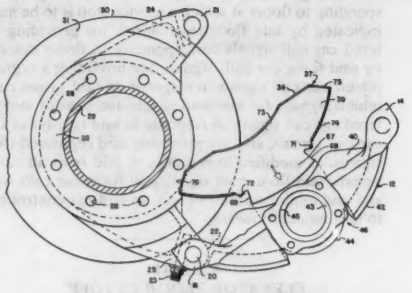
a friction liner secured to a surface of the piston.

4,352,414

FRICTION PAD AND SUPPORT FOR A DISC BRAKE

James P. Scott, Fort Wayne, Ind., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Dec. 1, 1980, Ser. No. 212,001
Int. Cl.³ F16D *55/224, 65/02*
U.S. Cl. 188—73.34 **7 Claims**



1. In a disc brake, a rotor having oppositely disposed friction surfaces, a caliper including a leg extending radially inward adjacent a friction surface of said rotor, a wall extending radially inward adjacent the other friction surface of said rotor and a bridge straddling the periphery of said rotor and joining said leg and said wall, load applying means carried by said wall, a friction pad intermediate said leg of said caliper and said adjacent friction surface of said rotor, a friction pad intermediate said load applying means and said other friction surface of said rotor, each said friction pad comprising a backing plate and friction material secured to part of said backing plate, each said backing plate being defined by circumferentially spaced lateral edges and having a tab of substantial circumferential length less than the distance between said lateral edges extending radially therefrom, means mounting said friction pads to said caliper comprising an aperture in said bridge defined on two sides by circumferentially spaced, axially extending, radially converging edges, said radially extending tabs being bounded by circumferentially-spaced converging edges slidably carried by said aperture edges and an access slot extending radially through at least one of said aperture edges the circumferential length of said access slot and said aperture together being adequate to radially pass the tab of said brake pad backing plate to permit installation and removal thereof.

4,352,415

BRAKES

Ralph E. Powell, Drapers Rd., Gordonvale, Queensland, Australia (4865)

Filed Oct. 17, 1979, Ser. No. 85,704
Claims priority, application Australia, Oct. 17, 1978, PD6422; Apr. 27, 1979, PD8563
Int. Cl.³ F16D *65/36*
U.S. Cl. 188—156 **5 Claims**

1. A brake assembly including:

a brake housing;

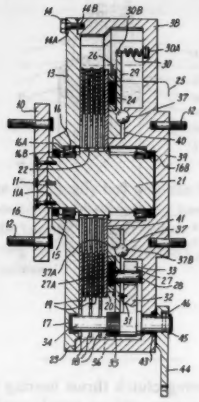
a wheel shaft rotatable in the housing;

an armature plate in the housing, secured to and rotatable with the shaft;

a movable actuator in the housing, movable axially from an inoperative position to an operative position closer to the armature plate;

an electromagnet housed in an electromagnetic housing and adapted, when energized, to rotate, and thus urge the actuator to rotate, with the armature plate, from its inoperative position to its operative position;

a lever member operatively attached to the electromagnet housing and adapted to be actuated by actuation of said electromagnet, said lever member having gear means



associated therewith rotatably engaging the movable actuator;

a rotatable brake disc in the housing, rotatable with the shaft; and

a non-rotatable brake member in the housing; the movable actuator being adapted, when moved by said lever to the operative position by the interengagement of the gear means with the lever member upon actuation of said electromagnetic, to force the rotatable brake disc and the nonrotatable brake member into frictional contact to brake the rotation of the said disc and the shaft to which it is connected.

4,352,416

CAST IRON RAILROAD BRAKE SHOES

Hugo R. Larson, Ridgewood, and Chandi P. Biswas, Ramsey, both of N.J., assignors to Abex Corp., Columbus, Ohio

Continuation-in-part of Ser. No. 759,231, Jan. 18, 1977, abandoned. This application Dec. 12, 1977, Ser. No. 859,259

Int. Cl.³ F16D *69/02*

U.S. Cl. 188—251 M **2 Claims**

1. A cast iron railroad brake shoe consisting essentially of about (weight %):

Carbon—2.5 to 3.5;

Silicon—1.6 to 2.2;

Phosphorus—more than 2 and up to 10;

Sulfur and Manganese both present in the ratio of weight % S>weight % Mn/1.8;

balance essentially iron except for impurities and tramp elements;

the amount of sulfur in excess of weight % Mn/1.8 accounting for increased wear resistance in proportion to said excess.

4,352,417

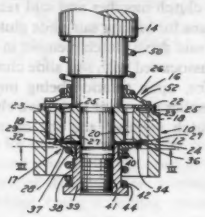
CONTROL VALVE FOR SHOCK ABSORBER PISTONS AND THE LIKE

Jonathan D. Stinson, Detroit, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 3, 1980, Ser. No. 193,555

Int. Cl.³ F16F *9/50*

U.S. Cl. 188—322.15 **6 Claims**



1. A piston rebound control valve for controlling the flow of liquid through a rebound passageway in a piston housing comprising:

a flexible valve disc covering said passageway;

a valve seat abutting said valve disc when said disc is in a seated position thereagainst;

a biasing means for resiliently biasing said valve seat against said valve disc;

said valve seat having a debossed section spaced away from said seated valve disc when said disc is in its seated position;

said valve disc constructed to flex toward said debossed section of said valve seat in response to a predetermined pressure in said passageway to provide initial flow from said passageway by said valve disc, said predetermined pressure being less than the pressure needed to lift said valve seat against its biasing means.

4,352,418

HUB CLUTCH

Masao Teraoka, Sano, Japan, assignor to Tochigi-Fuji Sangyo Kabushiki Kaisha, Tochigi, Japan

Filed Jul. 28, 1980, Ser. No. 172,851

Claims priority, application Japan, Jun. 24, 1980, 55-88453[U]

Int. Cl.³ F16D *11/10*

U.S. Cl. 192—36 **6 Claims**

1. A hub clutch for use in a wheel drive assembly of a four-wheel drive vehicle, the assembly being of the type including a drive shaft selectively operable in a driving mode and rotating to transmit a rotational driving force and in a non-driving mode to interrupt such rotational driving force, and a hub positively driven when the drive shaft is in the driving mode thereof and freely rotatable when the drive shaft is in the non-driving mode thereof, said hub clutch comprising:

a sleeve drive clutch member adapted to be fixed to a drive shaft to rotate therewith during the driving mode thereof;

a driven clutch member positioned radially outwardly of said drive clutch member and adapted to be fixed to a hub, said driven clutch member including a single set of circumferentially spaced first teeth;

a slide clutch member positioned radially between said drive clutch member and said driven clutch member, said slide

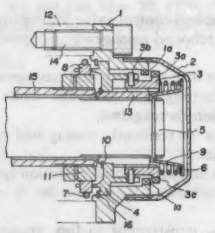
clutch member including a set of circumferentially spaced second teeth, said slide clutch member being mounted on said drive clutch member for rotation therewith and for axial movement relative thereto between an engaged first position whereat said second teeth are in engagement with said first teeth, thereby to transmit rotation of said drive clutch member to said driven clutch member, and a disengaged second position whereat said second teeth are out of engagement with said first teeth;

a retainer mounted about said drive clutch member for rotation with said slide clutch member and adapted to be mounted on a nonrotatable portion of the assembly, the axial position of said retainer with respect to said drive clutch member being fixed;

brake means for applying a predetermined braking pressure to said retainer, thereby for retarding rotation of said retainer and creating a limited relative rotation between said slide clutch member and said retainer;

resilient means for biasing said slide clutch member to move axially of said drive clutch member in a first direction; and

cam means associated with said slide clutch member and said retainer for, upon rotation being imparted to said slide clutch member by one of said drive clutch member or said driven clutch member and the operation of said brake



means to create said limited relative rotation between said slid clutch member and said retainer, allowing axial movement of said slide clutch member in said first direction, and for, upon rotation being imparted to said slide clutch member by the other of said driven clutch member or said driven clutch member and the operation of said brake means to create said limited relative rotation between said slide clutch member and said retainer, moving said slide clutch member axially in a second direction against the force of said resilient means, said axial movement of said slide clutch member in said first direction being from one of said first or second positions to the other of said first or second positions, and said axial movement in said second direction being from said other of said first or second positions to said one of said first or second positions, said cam means comprising a contoured cam surface formed on one of said retainer or said slide clutch member and a pin member fixed to the other of said retainer or said slide clutch member, said pin member being biased into contact with said contoured cam surface by said resilient means, such that upon said limited relative rotation between said slide clutch member and said retainer said pin member follows the contour of said cam surface, thereby achieving axial movement of said slide clutch member.

4,352,419

SELF CENTERING CLUTCH THRUST BEARING

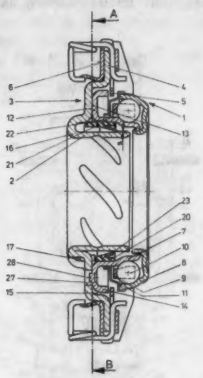
Armin Olschewski, Schweinfurt; Manfred Brandenstein, Eussenheim, and Lothar Walter, Schweinfurt, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Jul. 16, 1980, Ser. No. 169,627

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1979, 2931022

Int. Cl.³ F16D *23/14*

U.S. Cl. 192—98 **9 Claims**



1. In a self centering clutch thrust bearing having rotating outer bearing ring means with an annular surface adapted to engage a clutch lever, fixed inner bearing ring means axially extending toward the clutch side of said bearing, a plurality of rolling bodies in a cage between said rotating and fixed bearing rings, a sliding housing having a sliding sleeve, and a surface adapted to axially engage said inner bearing ring means and have limited radial and circumferential movement with respect thereto, and a damping ring of resilient material between said inner bearing ring means and sliding sleeve, said damping ring having resilient fingers extending toward said sleeve, and wherein said inner ring means and sleeve are spaced sufficiently to permit radial play therebetween; the improvement wherein said damping ring, on the side thereof axially extending away from said clutch, has axially directed first projection means and axially directed second projection means, said projection means engaging recesses in said housing with play, said second projection means having less resiliency than said first projection means and being adapted to engage the sides of the respective recesses in said housing after said first projection means have engaged the sides of their respective recesses upon turning movements in said bearing.

4,352,420

FRICTION CLUTCH DRIVEN PLATE

Ian C. Maycock, Leamington Spa, England, assignor to Automotive Products Limited, Leamington Spa, England

Filed May 6, 1980, Ser. No. 147,186

Claims priority, application United Kingdom, May 10, 1979, 7916306

Int. Cl.³ F16D *3/66*

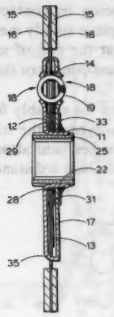
U.S. Cl. 192—106.2 **7 Claims**

1. A friction clutch driven plate having a hub with a circumferential flange thereon, said hub comprising:

an annular metal plate having a central cylindrical neck, and an annular central insert having inner splines for mating with a shaft and outer teeth for engagement on the neck, the insert being a force fit into the neck to hold the insert against axial movement and by engagement of its outer teeth on the neck to hold the insert against rotational

movement relative to the plate, said plate then constituting a hub flange;

an annular friction facing carrier co-axial with the hub and arranged to one side of the flange;



a retainer plate rotationally fast with the flange and arranged on the opposite side of the carrier to said flange so as to sandwich the carrier therebetween;

and a spring ring forced over said neck to hold the retainer axially in position.

4,352,421

ARRANGEMENT FOR THE ORIENTED FEEDING OUT OF CAPS

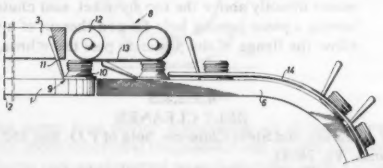
Alvar Olsson, Dalby, and Peter Giacomelli, Lund, both of Sweden, assignors to Tetra Pak Developpement SA, Switzerland

Filed Dec. 5, 1980, Ser. No. 213,469

Claims priority, application Sweden, Dec. 11, 1979, 7910169

Int. Cl.³ B65G *47/14, 29/00*

U.S. Cl. 198—392 **6 Claims**



1. Apparatus for the oriented feeding out of caps of the type having a cap body and a projection arranged at an angle thereto, comprising:

a rotating disc with a planar working surface onto which the caps are fed in random orientation;

a guide rail, in the form of a continuous ring arranged coaxially with the disc and a lower periphery of the ring being spaced at a uniform continuous height above the working surface of the disc, for guiding the caps upon rotation of the disc so that the cap body projects under the guide rail and the projection contacts the guide rail to stop the cap; and

feeding-out means arranged adjacent the guide rail to engage the cap body and pull the cap beneath and past the guide rail with the projection being bent downwardly when clearing the ring.

4,352,422

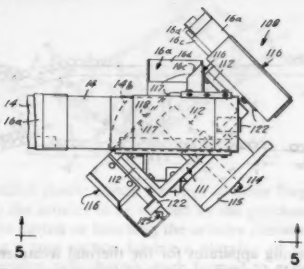
BOX TRANSFER APPARATUS

George L. Meyers, Menasha, and Thomas M. Gorshe, Neenah, both of Wis., assignors to American Can Company, Greenwich, Conn.

Continuation of Ser. No. 29,685, Apr. 13, 1979, abandoned, which is a division of Ser. No. 845,224, Oct. 25, 1977, Pat. No. 4,164,171. This application Sep. 26, 1980, Ser. No. 191,342

Int. Cl.³ B65G *47/24*

U.S. Cl. 198—404 **1 Claim**



1. Transfer means for transferring flat-sided boxes between a pair of first and second conveyors disposed in different horizontal planes, the first of the conveyors moving a box in the process of being folded along a folding mandrel toward a discharge end of the mandrel and the second conveyor receiving the folded box discharged from the mandrel for transporting the received box to a filling machine, the second conveyor extending along a different path beneath the first conveyor, and comprising:

a plurality of mutually spaced box carriers supported by arms attached to a horizontal shaft for rotational movement about an axis disposed between said planes at the end of the conveyor associated with the mandrel which axis extends at a first 45° angle as respects the horizontal axis of the direction of travel of the first conveyor in its horizontal plane of travel, said carriers being disposed at a second 45° angle as respects the rotational plane of movement of said arms about said axis so that when said shaft is rotated 360° the axis of each carrier is sequentially aligned first to the axis of said first conveyor and 180° later is at right angles to the axis of the first conveyor,

an indexing means for effecting incremental movement of said first conveyor and like incremental movement of said box carriers about said axis of said horizontal shaft in unison to accommodate feed of said boxes from the discharge end of said mandrel individually to related ones of said container carriers for transfer individually to the second of said conveyors, thereby to invert and turn said boxes 180° about their longitudinal axes and 90° about their transverse axes, respectively, with respect to said first conveyor;

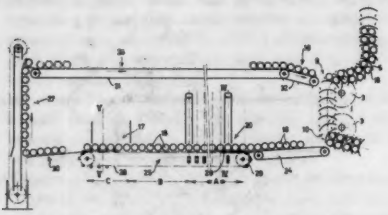
each carrier being pocket-shaped in cross section and presentable to the discharge end of said mandrel laterally to receive and to hold a box in provision of its transposition and transfer between said conveyors, each said carrier being presentable in juxtaposed relation to and above said other conveyor to discharge a box radially from a related carrier to said other conveyor, and means effective at the time of juxtaposition to transfer a box from each said carrier to said other conveyor upon completion of inverting the box 180° and turning said box through said 90° angle;

the discharge end of said mandrel being defined by a 45° angle when viewed in top plan and the end adjacent thereto of each carrier being defined by a mating 45° angle so the horizontal axis of each pocket is substantially coincident to the horizontal axis of the mandrel each time a 45° end of a pocket is mated to the 45° end of the mandrel.

4,352,423
CONVEYING APPARATUS

Salomon Santen, Amsterdam, Netherlands, assignor to Stork Amsterdam B.V., Netherlands

Filed Jul. 31, 1980, Ser. No. 174,175
Claims priority, application Netherlands, Aug. 1, 1979, 7905925
Int. Cl.³ B65G 37/00
U.S. Cl. 198—472 7 Claims



1. Conveying apparatus for the thermal treatment of commodities packed in containers, said conveying apparatus comprising an elongate, flexible conveyor and means for conveying said flexible conveyor along a closed path of travel, carriers for containers to be treated being attached to said flexible conveyor at spaced intervals therealong for moving therewith, at one location along said path of travel is a loading unit for loading a said carrier with containers to be treated as said carrier moves past said loading unit and at a second location spaced from the one location is an unloading unit for unloading treated containers from a said carrier as that said carrier moves past said unloading unit, said loading unit comprising means for forming sticks of containers and means for pushing a said stick into a sheath, and loading means at one side of said conveyor for loading each carrier in one single action from said one side of said conveyor with at least two sheaths and said unloading unit comprising means for unloading the at least two sheaths from each said carriers in one single action from one side of said conveyor.

4,352,424
DEVICE FOR CONVEYING MOLDED PIECES

Yoshiyuki Ichizawa, Sohka, and Tsugio Nomoto, Higashi Kurume, both of Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 56,990, Jul. 12, 1979, abandoned. This application Nov. 13, 1980, Ser. No. 206,659
Claims priority, application Japan, Jul. 13, 1978, 53/85541
Int. Cl.³ B65G 47/34
U.S. Cl. 198—482 2 Claims

1. A device for conveying molded pieces used for forming bottle-shaped containers, each of said pieces having a body, a flange formed on one end of said body and a body bottom formed on the end opposite said flange, said device comprising:

piece supply means for slidably feeding said pieces to a near vertically inclined endless conveyor, said conveyor comprising;

a chain-engaged drive sprocket;

drive means for driving said sprocket at a constant speed in a predetermined direction;

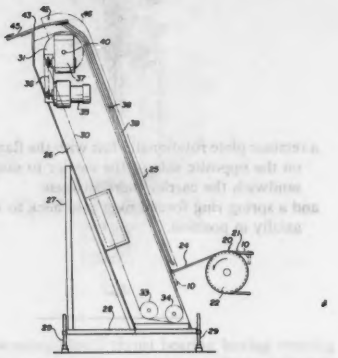
a guide sprocket, either said guide sprocket or said drive sprocket being a top sprocket located at the top of said endless conveyor;

an endless drive chain connecting said drive sprocket and said guide sprocket;

supporting-pushing attachments attached at equal, predetermined intervals along said drive chain, said attachments being capable of supporting the body bottoms of the pieces;

upper and lower pairs of guide rails, said lower pair of guide rails being closer to said drive chain than said upper pair, said guide rails being parallel to and outside said chain, located so that the portion of said drive chain nearest said guide rails moves upwardly, said guide rails surrounding the flange of said piece when said piece is pushed upwardly by said attachments, said lower pair of guide rails being in contact with or immediately adjacent to said piece supply means so that the flange of a piece located at the end of said piece supply means nearest said endless conveyor contacts the lower pair of guide rails;

piece exhaust means for slidably feeding said pieces from said endless conveyor at the top of said conveyor by engaging said flanges, said attachments extending outwardly from said chain a distance less than the vertical



distance encompassed by said pieces when positioned along the top sprocket and supported by said piece exhaust means;

a piece delivery portion for conveying out the piece conveyed to the top of said endless conveyor into said exhaust means, said piece delivery portion having a piece transfer chute plate secured to the tops of said guide rails, said guide rails being slightly bent along the peripheral surface of the top sprocket toward the piece delivery portion to provide an uppermost piece conveying position, said chute plate extending to said exhaust means directly above the top sprocket, said chute plate having a piece passing hole formed therein of a size to allow the flange of the pieces to pass therethrough.

4,352,425
BELT CLEANER

Ray Childress, and Steve Childress, both of P.O. Box 853, Richlands, Va. 24641

Filed Apr. 22, 1981, Ser. No. 256,536
Int. Cl.³ B65G 45/00
U.S. Cl. 198—499 5 Claims

1. A cleaner for an endless belt having upper and lower runs movably mounted on a support, comprising

a cross shaft,

means for rotatably mounting the cross shaft on the support for rotation about an axis extending transversely to the lower belt run,

lever means having an inner end portion affixed on the cross shaft for rotation therewith,

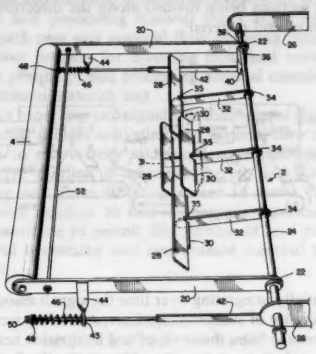
blade means mounted on an outer end portion of said lever means for scraping against the lower side of the lower belt run,

roller means for riding along the upper side of said lower belt run,

elongate arms having inner end portions rotatably mounted on said cross shaft and outer end portions rotatably sup-

porting said roller means whereby the arms are pivoted about said cross shaft by the roller means when the latter follows upward and downward belt deflections,

crank arm means having inner end portions affixed on the cross shaft for rotation therewith,



and force-transmitting means engaging between said elongate arms and the crank arm means whereby to rock the cross shaft and thereby move the blade means upwardly and downwardly with said belt run in response to upward and downward deflections of said lower belt run.

4,352,426

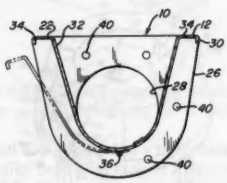
AUGER FEED DEVICE

Russell I. Peterson, Jr., Oil City, Pa., assignor to Conair, Inc., Franklin, Pa.

Continuation of Ser. No. 44,507, Jun. 1, 1979, abandoned. This application Oct. 30, 1980, Ser. No. 202,490

Int. Cl.³ B65G *33/00, 21/08*

U.S. Cl. 198—657 **13 Claims**



1. An auger feed device comprising: an elongated auger rotatable about the central longitudinal axis thereof and having a discharge end; an elongated trough assembly having a longitudinally extending upwardly open trough portion; said auger extending longitudinally within said trough portion and cooperable therewith to convey material received within said trough portion to a discharge opening in one end of said trough assembly adjacent said discharge end; said trough portion comprising a pair of transversely adjacent longitudinally extending trough sections with one of said trough sections being a rigid portion of said trough assembly and the other of said trough sections being pivotably movable with respect to said one of said trough sections about an axis located at least below said central axis and extending longitudinally throughout at least the major longitudinal extent of said trough portion; and biasing means carried by said trough assembly which is operative to normally bias said other of said trough sections in cooperative operating relationship with said auger while permitting said other of said trough sections to pivot away from said one of said trough sections when said bias is overcome.

4,352,427

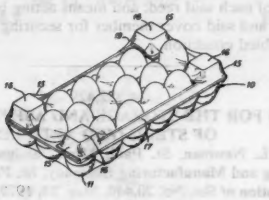
STACKABLE EGG CARTON HAVING OVERWRAP OVER EGGS SUFFICIENTLY TAUT TO RIGIDIFY CARTON

Connie Lake, Tinley Park, Ill., assignor to S. Eisenberg & Co., Division of Creative Industries, Inc., Bridgeview, Ill.

Filed Dec. 10, 1980, Ser. No. 215,110

Int. Cl.³ B65D *65/16, 81/16, 85/32*

U.S. Cl. 206—45.33 **7 Claims**



1. A molded plastic carton for eggs or other fragile articles containing the articles to be viewed by the purchaser without opening the carton or touching the articles contained therein, comprising a tray section having a plurality of rows of upwardly opening cells therein, each formed to generally conform to the articles to be carried in the carton, said carton having corner protective and stacking bolsters at each corner thereof, hinged to extend over the corner articles carried in the carton, said cells each being of a lesser depth than the height of the articles carried in the carton, and said tray section having an outer rim extending thereabout, a common integral hinge line extending along said rim along each side of the carton, hinging said bolsters to be pivoted along the sides of the carton to cover the articles in the corner cells thereof, said bolsters being cup-like in form when in open positions and having relatively flat top portions when extending over the corner articles, spaced a substantial distance above the height of the articles carried in the carton, and side panels connecting said bolsters together and hinged to the sides of the carton along the common hinge lines and extending upwardly along said bolsters for a portion of the height thereof and the eggs carried between said bolsters, and stopping short of the tops of said bolsters, embossments extending upwardly of the top rim of the tray section of the carton along the side edges thereof, and limiting inward movement of said side panels connecting the bolsters together, and means retaining said bolsters to extend over the corner cavities when loaded with eggs and retaining said side panels to extend upwardly along the eggs carried in said carton.

4,352,428

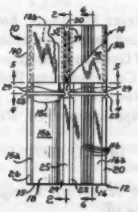
REED HOLDER

Vito S. Pascucci, and Elmer J. Aiello, both of Kenosha, Wis., assignors to G. Leblanc Corporation, Kenosha, Wis.

Filed Jan. 15, 1981, Ser. No. 225,258

Int. Cl.³ B65D *51/26, 41/00;* **A45C** *11/00;* **B65D** *85/20*

U.S. Cl. 206—314 **9 Claims**



1. A reed holder comprising a common base member and a cover member, said common base member having a plurality

of rigid, elongated portions extending therefrom in spaced apart parallel relation and with said common base member having planar surfaces each for receiving a reed with the flat surface thereof against said planar surfaces, and a plurality of elastomeric members respectively encircling said elongated portions, each for resiliently and releasably holding a reed against said planar surfaces, said cover member comprising an open-ended sleeve having top, bottom and side walls engageable over said elongated extending portions for covering a tip portion of each said reed, and means acting between said base member and said cover member for securing said reed holder in assembled condition.

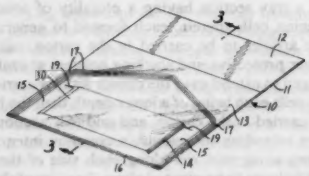
4,352,429
MEANS FOR THE STORAGE AND ASEPTIC DELIVERY OF STERILIZED ARTICLES

Charles L. Newman, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 20,440, Mar. 14, 1979, abandoned. This application Jul. 14, 1980, Ser. No. 168,501

Int. Cl.³ A61B *19/02*; A61L *15/00*

U.S. Cl. 206—439 **4 Claims**



1. A package having high strength, bacteria-impermeable, sterilizable wall members adapted to contain an article in a sterile condition for use in a surgical environment, said package comprising:

(a) a first wall member having a top edge, bottom edge, opposite side edges flanking said top edge and having a window spaced from said edges to provide border portions between said edges and said window;

(b) a second wall member being sealed to said first wall member to afford a storage space between said wall members adapted for containing said article; and

(c) a flap member overlaying said window and said border portions and attached to said first wall member around the entire periphery of said window, said flap member being peelably sealed to said first wall member around said border portions so that when said flap member is peeled from said first member said article can pass from said storage space through said window while contacting only said border portions.

4,352,430
METHOD AND APPARATUS FOR SORTING FOREIGN BODIES FROM MATERIAL ON A MOVING CONVEYOR BELT

Maxemin Maier; Heinz Wittkugel, both of Hamburg; Klaus J. Liepelt, Ahrensburg, and Jorn Homeier, Henstedt-Ulzburg, all of Fed. Rep. of Germany, assignors to H.F. & Ph.F. Reemtsma G.m.b.H. & Co., Hamburg, Fed. Rep. of Germany

Filed Jan. 16, 1980, Ser. No. 112,594

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1979, 2901970

Int. Cl.³ B07C *5/342*

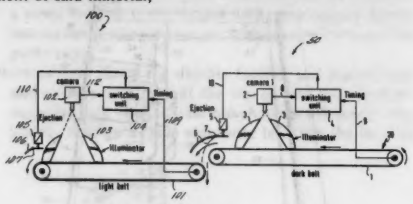
U.S. Cl. 209—577 **16 Claims**

1. A method for removing foreign bodies from material comprising the steps of:

moving said material along a given direction on a conveyor while exposing said material to light from a source;

successively detecting with a television camera light coming from said material, in response to exposure, in a plurality of line areas extending along a line perpendicular to said given direction of movement of said material and across said moving material;

separating the line areas extending along each line into a plurality of sections, each including a plurality of areas, said sections being divided along the direction of movement of said material;



sequentially integrating over time the signals associated with a plurality of successive and corresponding sections from successive lines, the result of said integration being cleared and said integration reinitiated periodically, for producing a plurality of operating signals, each indicating the presence or absence of a foreign body in the areas associated with the integrated signals; and

removing each of said foreign bodies from said material in accordance with said operating signals.

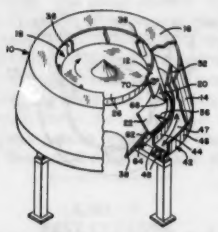
4,352,431
APPARATUS FOR SORTING CONTAMINANT MATERIAL FROM PROCESSING MATERIAL

Adrian Artiano, Everett, Wash., assignor to Black Clawson Inc., Everett, Wash.

Filed Jun. 4, 1979, Ser. No. 45,513

Int. Cl.³ B07C *5/00*

U.S. Cl. 209—600 **15 Claims**



1. An apparatus for sorting contaminant material, such as rocks and metal, from processing material, such as wood chips, comprising:

a housing having an internal wall formed of a surface of revolution along a central vertical axis;

feed means defined in the upper portion of said housing for receiving said processing material;

discharge means in the lower portion of said housing for discharging said processing material;

impeller means disposed in said housing for receiving said processing material from said feed means and for propelling said processing material radially outwardly against said internal wall of said housing;

means for sensing vibrations of said internal wall due to impingement of said processing material thereon and for generating signals in response thereto;

means for distinguishing between signals generated in response to impact of said processing material from signals

generated in response to impact of said contaminant material;

material flow diverting means disposed vertically beneath said internal wall of said housing downstream in the movement of the normal flow path of said processing material and movable between an inoperative position in which said processing material flows along its normal flow path past said material flow diverting means to an operative position for diverting from said normal flow path a portion of said processing material containing said contaminant material; and

means for receiving said signal from said signal distinguishing means and for activating said material flow diverting means to move from said inoperative position to said operative position in response thereto and for further causing said flow diverting means to move from said operative position to said inoperative position after a sufficient time to permit said portion of said processing material containing said contaminant material to be diverted.

4,352,432

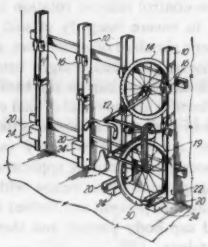
BICYCLE STORAGE RACK

Terrance R. Smith, 28 Roundhay Dr., Ottawa, Ontario, Canada (K2G 1B5)

Continuation-in-part of Ser. No. 806,307, Jun. 13, 1977, abandoned. This application Aug. 2, 1979, Ser. No. 62,944

Int. Cl.³ A47F *7/04*; B62H *3/08*

U.S. Cl. 211—19 **7 Claims**



1. A bicycle storage rack comprising an elongated U-channel adapted for vertical mounting on a vertical supporting surface;

said U-channel being formed of a rigid material bent along a pair of parallel bend lines to form a pair of arms extending the length of said channel in opposition to each other, said arms being deeper than the depth of a bicycle wheel with tire when rim mounted and flexible along the bend lines thereof with respect to each other to have a normal bias wherein the space between said opposing arms has a distance less than the width of the bicycle tire and rim and to be distendible on entry of the bicycle tire and rim to a distance slightly wider than said tire and rim, and thereafter releasably return to the normal bias so as to clamp the tire and rim thereof when said bicycle is secured in a vertical position with its other wheel resting on or near the ground, each of said arms having a plurality of holes adjacent its outer edge extending along the length thereof, the holes in one arm being horizontally aligned with the holes in the opposite arm to form opposing pairs across the bight of said U-channel wheel restraint means comprising a pair of restricting members each of which is located in a hole on an arm of said U-channel adjacent the free edge thereof in opposition to each other, to thereby reduce the space between said opposing arms to a distance less than the width of the bicycle tire and rim, said restraint means causing said arms to distend on entry of the bicycle tire and rim and thereafter, at least in part, surrounding said wheel and rim to releasably clamp the wheel within said channel.

4,352,433

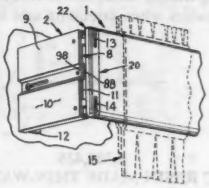
ROD AND BRACKET ASSEMBLY

James A. Ford, Sherman Township, St. Joseph County, Mich., assignor to Kirsch Company, Sturgis, Mich.

Filed Dec. 14, 1979, Ser. No. 103,777

Int. Cl.³ A47H *1/02*

U.S. Cl. 211—105.1 **15 Claims**



1. A device for the support of a drapery by extension thereof through a hem at the top of said drapery, comprising:

elongated straight rod means having rearwardly projecting flanges along the upper and lower edges thereof;

an end bracket attachable to a supporting surface and having plate means with a pair of remotely facing top and bottom hooks projecting beyond the outer edge of said plate means; and

an end cap fixedly but releasably attached to said rod means and being slidable therewith through the hem of said drapery, the end cap having a first portion inserted between adjacent ends of said flanges for supporting said rod means and a second portion arranged for covering both the adjacent end of said rod means and said outer edge of said plate means, said end cap including slot defining means for receiving and removably retaining said hooks.

4,352,434

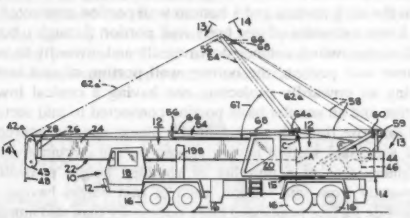
PENDANT SUPPORTED HYDRAULIC EXTENSIBLE BOOM

Darwin N. Poock, Cedar Rapids, Iowa, assignor to FMC Corporation, Chicago, Ill.

Filed May 1, 1980, Ser. No. 145,529

Int. Cl.³ B66C *23/00*

U.S. Cl. 212—186 **15 Claims**



1. A crane having a body and having an extensible boom, said boom having a base section pivotally connected to the body and having an intermediate boom section and a tip section, said boom sections mounted in telescopic relation, the improvement comprising a mast pivotally mounted on said boom, a pendant extending from the top of the mast to the end of the boom and into the boom for connecting to the base section, an intermediate sheave rotatably mounted in fixed relation to the intermediate section, an internal tip section sheave rotatably mounted in fixed relation to the tip section,

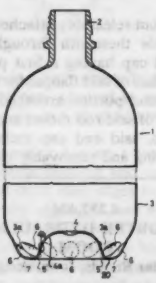
two hydraulic cylinders recieved in said boom, one of said cylinders connected between the base section and the intermediate section, a cylinder sheave journaled on the forward end of said one cylinder, the other of said hydraulic cylinders being connected between the tip section and the intermediate section, said cylinders and a portion of said pendant trained around said sheaves cooperating to extend said boom sections and move said sheaves with respect to each other, the movement of said sheaves paying out pendant from the boom in response to extension of said boom sections to compensate for the change in length of the boom, said pendant portion within said boom being trained about said sheaves in a manner which assists said cylinders when extending said boom sections.

4,352,435

SYNTHETIC RESIN MADE THIN-WALLED BOTTLE

Yataro Yoshino; Akiho Ota, and Hiroaki Sugiura, all of Tokyo, Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

Division of Ser. No. 101,172, Dec. 7, 1979, Pat. No. 4,301,933. This application Jan. 30, 1981, Ser. No. 229,878
Claims priority, application Japan, Jan. 10, 1979, 54-2805
Int. Cl.³ B65D *1/02*
U.S. Cl. 215—1 C **1 Claim**



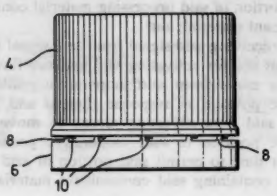
1. A synthetic resin thin-walled bottle having a neck portion, a biaxially oriented body wall portion extending downwardly from the neck portion and a bottom wall portion connected to the lower extremity of said body wall portion through a body wall section which extends downwardly and inwardly to said bottom wall portion, the bottom wall portion of said bottle having an upwardly projecting rise having a conical lower portion and an annular basal portion connected to said section and said rise through a substantially planar annular interconnect area, said section having spaced on the circumferential periphery thereof a plurality of rounded bulges projecting outwardly from said section, each of said bulges having an underside surface positioned more outwardly than said annular interconnect area, the underside surface of said bulges being annularly arranged and forming an outer ground-contacting surface for said bottle, said interconnect area forming a displaceable inner ground-contacting surface between said basal portion and the outer ground-contacting surface, said inner ground-contacting surface being positioned at a higher level than the outer ground-contacting surface and provided with elasticity so that when the bottle is empty, said inner ground-contacting surface stays at a higher level than the outer ground-contacting surface, but when the bottle is full, said inner ground-contacting surface is pressed down to the same level as the outer ground-contacting surface.

4,352,436

PILFERPROOF CAP

Robert M. Chartier, Waterloo, and Jean P. Richard, St. Bruno, both of Canada, assignors to Consumers Glass Company Limited, Etobicoke, Canada

Filed Nov. 28, 1980, Ser. No. 211,389
Int. Cl.³ B65D *41/34*
U.S. Cl. 215—252 **20 Claims**



1. A plastic cap with tamper indicating provision for twist application to a container, comprising a cap body portion, a band for application over a shoulder provided on a container, a plurality of circumferentially spaced-apart bridges for connecting and axially spacing apart the cap body portion and band, said bridges being sufficiently weak to break readily upon unthreading of the cap body portion for removing such applied cap from a container, means for driving said band relative to said cap body portion as said cap is twist applied onto a container to control relative rotation of said cap body portion and band to ensure integrity of said bridges as said band is applied over a shoulder of a container, said drive means being normally disengaged, said bridges being thickened at their juncture with either the cap or the band and said drive means being associated with the other of said cap or band, said bridges in the area of their thinner portions flexing as said cap is twist applied to a container whereby said band moves towards said cap body portion during application of said cap to a container to engage said drive means with the thickened portions of the bridges to prevent any further relative rotation between band and cap body portion and thereby ensure the integrity of said bridges.

4,352,437

COMBINED PRESSURE RELIEF AND INDICATOR MECHANISM

Joseph Bernatt, Casa Grande, Ariz., assignor to S&C Electric Company, Chicago, Ill.

Filed Oct. 16, 1978, Ser. No. 951,686
Int. Cl.³ B65D *25/00*
U.S. Cl. 220—89 A **20 Claims**

1. A combined pressure relief and pressure indicating mechanism for a vented housing filled with fluid at super-atmospheric pressure, comprising:

rupturable diaphragm means for normally closing the vent;

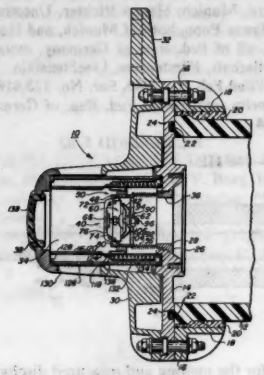
means for normally maintaining the diaphragm means in a first configuration as long as the fluid pressure is below a first value and for permitting the diaphragm to move out of the first configuration into a second configuration when the fluid pressure exceeds the first value;

puncturing means for puncturing the diaphragm in response to movement of the diaphragm out of the first configuration and toward the second configuration;

a normally unobservable movable indicator biased to an observable position; and

means, including the diaphragm means, for normally holding the indicator in the unobservable position as long as

the fluid pressure is greater than a second value and for releasing the indicator for movement to the observable



position in response to fluid pressure less than the second value, the second value being less than the first value.

4,352,438

PROTECTIVE SHIELD FOR OPEN CONTAINER

Charles M. Carino, 264 S. Fourth Ave., Ilion, N.Y. 13357

Filed Feb. 12, 1981, Ser. No. 233,831
Int. Cl.[3] B65D *90/52*
U.S. Cl. 220—90 7 Claims

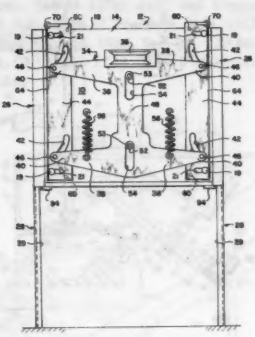
1. A protective device for use in conjunction with a liquid container of the type having an annular cover receiving rim that surrounds an opening formed in the top of the container, said protective device including an endless loop made of a thin deformable metal foil having a peripheral length that is slightly greater than the outer periphery of the container body, the lower portion of the foil loop passing coaxially over the top of the container to encircle its body, the middle portion of the foil loop being folded inwardly over the rim of the container to form a contoured surface that is seated in conformity against the rim and the top portion of the foil loop being folded downwardly into the container opening to form an annular protective wall about the opening and said foil loop containing a textured outer surface having a plurality of embossed lines that are obliquely inclined in reference to the center axis of said loop whereby liquid moving over said surface under the influence of gravity will remain in contact with said surface for an extended period of time.

4,352,439

APPARATUS FOR CLOSING THE DOOR OF A PRESSURE CHAMBER

Raju T. Makhijani, Erie, Pa., assignor to American Sterilizer Company, Erie, Pa.

Filed Apr. 13, 1981, Ser. No. 253,254
Int. Cl.[3] B65D *45/00*
U.S. Cl. 220—316 6 Claims



1. Apparatus for closing the door of a chamber capable of maintaining pressure within the chamber comprising:

an operator for moving the door among its closed position, in which pressure can be maintained within the chamber, its partially closed position, in which access cannot be had to the interior of the chamber but in which pressure cannot be maintained within the chamber, and its open position, in which access can be had through the chamber opening to the interior of the chamber and in which pressure cannot be maintained within the chamber;

a guide disposed on the chamber for restricting movement of the door to that necessary for it to travel among its closed, partially closed and open positions;

a member secured to the chamber that is stationary relative to the chamber;

a member disposed on the chamber that is movable relative to the chamber door and capable of being forced by said operator between the door and said stationary member to effect a separation of the door and said stationary member from each other of a predetermined distance to move the door to its closed position; and

means disposed on the chamber for preventing the door from moving from its partially closed position toward its closed position until said movable member is forced between said stationary member and the door.

4,352,440

APPARATUS FOR TRANSPORTING ELECTRONIC COMPONENTS OR THE LIKE FROM ONE LOCATION TO ANOTHER IN ALIGNMENT

Kikuji Fukai, and Hideo Shirouchi, both of Takasaki, Japan, assignors to Taiyo Yuden Co., Ltd., Tokyo, Japan

Filed May 27, 1980, Ser. No. 153,003
Claims priority, application Japan, Jun. 25, 1979, 54/79957
Int. Cl.[3] B65G *57/16, 61/00*
U.S. Cl. 221—178 14 Claims

1. An apparatus for transferring articles from one location, where the articles are held in a random pile, to another location in a row, the apparatus comprising:

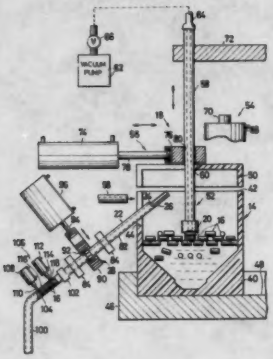
(a) a receptacle in said one location for receiving the articles;

(b) pickup means for repeatedly picking up the articles, at least one at a time, in the receptacle and depositing the articles in a predetermined position;

(c) an inclined chute for receiving the articles one at a time

at an entrance end thereof and conveying the articles in a row therethrough toward said other location;

(d) an entrance guide of substantially V-shaped cross section extending from the entrance end of the chute and lying in said predetermined position for directing the articles, as they are deposited on the entrance guide by the pickup means, into the chute; and



(e) means for rotating the chute and the entrance guide about the axis of the chute after the pickup means deposits at least one article on the entrance guide each time, in order to facilitate the entrance of the articles from the entrance guide into the chute.

4,352,441

TUBE KEY

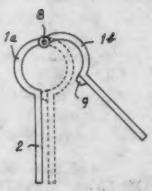
K. Göran Rosenlind, and S. B. Thomas Brandberg, both of Lindingö, Sweden, assignors to Svenska Streck Aktiebolag, Stockholm, Sweden

PCT No. PCT/SE79/00077, § 371 Date Dec. 6, 1979, § 102(e) Date Nov. 27, 1979, PCT Pub. No. WO79/00887, PCT Pub. Date Nov. 1, 1979

PCT Filed Mar. 30, 1979, Ser. No. 128,353

Int. Cl.³ B65D *35/32*

U.S. Cl. 222—99 **3 Claims**



1. Tube key for exuding a product packed in a soft tube by compressing the tube to flatten it and rolling same onto the tube key, said tube key comprising a handle carrying two parallel legs of substantially circular cross section which are free at the ends thereof opposite the handle, the legs of the tube key being made of a springy material such as a springy metal, a springy glass fibre material or plastic material, said legs being constructed and arranged to spring outwardly against the material of the tube as the tube is rolled onto the key, the least free distance between the legs being 0.25–0.75 times the average diameter of the legs and the average diameter of legs being 16–48 times the thickness of the material of the tube, and wherein one of the legs is formed with a slot which is open outwards opposite the handle and the width of which slot is slightly larger than twice the thickness of the tube material.

4,352,442

DEVICE FOR THE MELTING AND MEASURED DISCHARGE OF A THERMOPLASTIC ADHESIVE MATERIAL

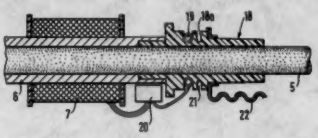
Erich Leibhard, Munich; Hanno Richter, Unterhaching; Gusztav Lang; Franz Popp, both of Munich, and Heinz Goellnitz, Ottobrunn, all of Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft, Fürstentum, Liechtenstein

Filed Feb. 21, 1980, Ser. No. 123,416

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1979, 2907484

Int. Cl.³ B67D *5/62*

U.S. Cl. 222—146 HE **12 Claims**



1. Device for the melting and measured discharge of a thermoplastic adhesive material comprising an axially extending melting chamber having an inlet opening at one end and an outlet opening spaced axially from it at the opposite end, a heating coil enclosing said melting chamber for melting the thermoplastic adhesive material so that it can be discharged from the outlet opening, an axially extending sealing sleeve secured to the inlet end of said melting chamber and extending outwardly therefrom and in general axial alignment therewith, said sealing sleeve arrange to prevent leakage of melted adhesive material out of the inlet opening to said melting chamber, wherein the improvement comprises that sealing sleeve being formed of a material having a significantly lower heat conductivity than the material forming said melting chamber, and having a first end located at the inlet opening of said melting chamber and a second end spaced outwardly away from the inlet opening to said melting chamber, a heating means located about said sealing sleeve between the first and second end thereof outside of said melting chamber and adjacent the inlet end of said melting chamber for heating the adhesive material located within said sealing sleeve so that a limited amount of heat is supplied sufficient for the adhesive material to pass into said melting chamber, said heating means having a heating capacity relatively small as compared to the heating capacity of said heating coil, and said heating means spaced axially from said heating coil.

4,352,443

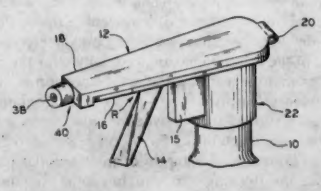
DISPENSER HAVING A TRIGGER-BULB PUMP

Sidney M. Libit, Glencoe, Ill., assignor to U.S. Cap & Closure, Inc., Chicago, Ill.

Filed Jun. 24, 1980, Ser. No. 162,429

Int. Cl.³ B65D *37/00*; B05B *11/01*

U.S. Cl. 222—207 **23 Claims**



1. A pump for a fluid container comprising: a spray head for dispensing fluid from the container, said head including a fluid-dispensing nozzle; first means for providing a flow of fluid from near the bottom of the container to the nozzle;

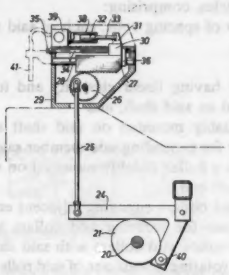
second means interposed in said first means for drawing fluid from said container and delivering it to and expelling it from said nozzle, said second means including an integral trigger having a flexible flange member with a bulb dependent therefrom and a hole through said flange leading into the interior of said bulb, the contours of said flange cooperating with said spray head to form intake and outlet fluid valves and an air breather valve, said valves being operated by actuating said trigger bulb.

4,352,444

CONTROLLABLE VOLUME DOSING DEVICE

Roy D. Lewis, Färjestaden, and Bernt V. Borg, Kalmar, both of Sweden, assignors to Norden Packaging Machinery Aktiebolag, Sweden

Filed Jan. 16, 1980, Ser. No. 112,547
Claims priority, application Sweden, Jan. 17, 1979, 7900399
Int. Cl.³ G01F *11/06*
U.S. Cl. 222—309 **17 Claims**



1. A controllable volume dosing device comprising:

a support structure;

a cylinder supported by said support structure;

piston means for said cylinder, said piston means including a piston mounted within said cylinder for movement between a first end position and a second end position, and a piston rod having a first end connected to said piston and a second end;

a valve associated with said cylinder, said valve being positionable in a first valve position in which material may be introduced into said cylinder, and a second valve position in which material may be expelled from said cylinder, the displacement of said piston within said cylinder between said first and second end positions controlling the volume of a dose of said material;

linear drive means for linearly driving said piston rod to move said piston along a piston path of movement between said first and second end positions, said linear drive means comprising a guide rod supported by said support structure and extending substantially parallel to said piston path of movement, a rack member journalled on said guide rod for linear movement therealong, a dog member carried by said rack member and engaging said second end of said piston rod, and a rotatable pinion engageable with said rack member to move said rack member along said guide rod in response to rotation of said pinion; and

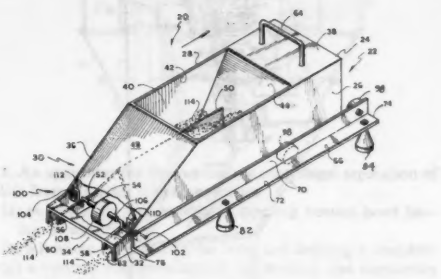
adjustable stop means associated with said piston means for defining said first end position of said piston, said adjustable stop means comprising a threaded member supported by said support structure and extending in a direction parallel to said piston path of movement, and a stop member threadably mounted on said threaded member so that rotation of said threaded member causes said stop member to move along said threaded member to adjust the position of said stop member, said stop member being engageable by one of said rack member and said dog member during movement thereof whereby said stop member sets the location of said first end position of said piston to thereby control the amount of displacement of said piston between said first and second end positions.

4,352,445

BUILDING MATERIAL APPLICATOR

Philip Cusumano, 246-25 137th Ave., and Vincent Cusumano, 246-26 137th Ave., both of Rosedale, N.Y. 11422

Filed Mar. 24, 1980, Ser. No. 133,660
Int. Cl.³ B05D *1/26, 1/30;* F04G *21/16*
U.S. Cl. 222—611 **14 Claims**



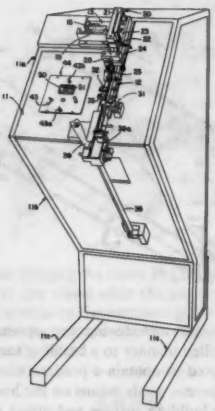
1. An applicator for introducing and spreading building material in a controlled manner to a building surface comprising; a housing adapted to contain a predetermined amount of building material therein, guide means on the housing adapted to engage with the building surface and direct the applicator into desired alignment therewith and along a desired path when the applicator is associated with the building surface and moved there along, metering means in communication with the interior of the housing and with at least one opening to the exterior thereof to direct a predetermined pattern of building material from the interior of the housing through the opening and onto the building surface, the housing including a base and an arrangement of side walls extending from the base and forming therewith an enclosure for a chamber to hold building material, the base adapted for engagement with the building surface, the side walls having a configuration when forming the chamber so that building material is directed toward a pair of spaced openings in the base communicating with the building surface when the applicator is positioned thereon, the metering means including a beater on the housing and positioned in the travel path of the building material from the chamber through the openings in the housing, the beater adapted to be actuated when the applicator is moved along the building surface to facilitate metering and direction of building material from the chamber through the openings onto the beater surface, the beater including an axle mounted on the housing, at least one paddle on the axle and positioned in the housing so that rotation of the axle will cause the paddle to rotate and engage and direct building material through the openings onto the building surface, beater drive means on the axle and extending from the housing into direct engagement with the building surface so that movement of the applicator along the building surface will automatically actuate the beater drive means and to rotate the axle and paddle, and the beater drive means including gear means interconnecting the axle with a shaft extending downward from the exterior of the housing into alignment with a guide surface associated with the building surface, a beater roller on the shaft in position for engagement with the guide surface when the applicator is moved along the building surface so as to rotate the interconnected shaft, gear means, axle and paddles.

4,352,446

SUBSTRATE SEPARATING MACHINE AND METHOD

David H. Young, Warrington, Pa., assignor to MTI Systems Corporation, Ivyland, Pa.

Division of Ser. No. 941,181, Sep. 11, 1978, Pat. No. 4,235,357.
This application Jun. 26, 1980, Ser. No. 163,171
The portion of the term of this patent subsequent to Nov. 25, 1997, has been disclaimed.
Int. Cl.³ B26F 3/00
U.S. Cl. 225—1 9 Claims



1. A machine for subdividing into individual substrates for use in electronic components a wafer which is prescored with a pattern of intersecting score lines defining the substrates, said machine comprising:

first means for advancing the wafer progressively over a first support means;

first means for halting said advance when the wafer extends by substantially the distance between one set of said score lines beyond a predetermined linear region of the support means paralleling these score lines;

the first support means being so constructed at and beyond said linear region as to impart a localized breaking effect to the wafer along the linear region in response to force applied to the wafer portion extending beyond the region;

first means for applying said force thereby to break off said wafer portion;

second support means sloped to allow advancement of the broken-off wafer portion beyond a predetermined linear region of the second support means paralleling the other set of score lines;

second means for halting said last-named advance when the portion extends beyond the last-named linear region by substantially the distance between the second set of score lines;

the second support means being so constructed at and beyond its said linear region as to impart a localized breaking effect to the wafer portion along the said last-named linear region in response to force applied to the wafer portion extending beyond said last-named linear region; and

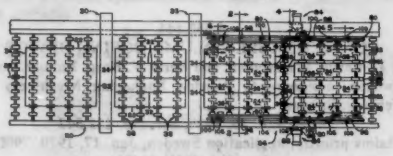
second means for applying said last-named force thereby to break off the last-named extending portion.

4,352,447

METHOD OF AND APPARATUS FOR SIDEWARD DISPLACEMENT OF SHEETS

Robert M. Bonaddio, Fresno, Calif., and John R. Dahlberg, Jeannette, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jul. 17, 1980, Ser. No. 169,548
Int. Cl.³ B26F 3/00; B65G 47/26
U.S. Cl. 225—2 16 Claims



1. A conveyor having a section for spacing edge portions of adjacent articles, comprising:

a plurality of spacing rolls, each of said spacing rolls comprising:

a shaft;

a member having linear elasticity and torque transmission mounted on said shaft; and

means slidably mounted on said shaft and engaging said member for expanding said member said expanding means includes a collar slidably mounted on said shaft adjacent each shaft end,

each of said collars engaging adjacent end of said member and means for securing said collars to their respective shaft to rotate said collars with said shaft; and

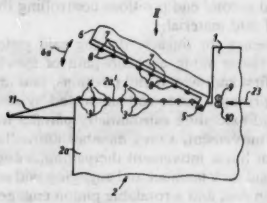
means for rotating at least one of said rolls about longitudinal axis of its shaft.

4,352,448

APPARATUS FOR DRYING SHEET-LIKE PHOTOGRAPHIC MATERIAL

Thomas Hammer; Wilfried Hehn; Franz Kocourek; Werner Sieber, all of Munich, and Viktor Osegowitsch, Taufkirchen, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 3, 1980, Ser. No. 212,604
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1979, 2951845
Int. Cl.³ B65H 17/20, 17/22
U.S. Cl. 226—108 20 Claims



1. In an apparatus for drying running strips or sheets of photographic material, the combination of first and second groups of transporting rollers having predetermined diameters and defining an elongated path for the advancement of photographic material in a predetermined direction; first and second groups of parallel shafts supporting the rollers of the respective groups, the shafts of each group of shafts being spaced apart from each other by distances each of which at least equals 2D wherein D is the diameter of a roller; and elongated guide members disposed at the opposite sides of the photographic material and extending in said direction to guide the photographic material in said path, the guide members at one side

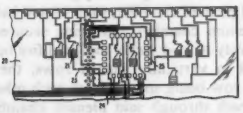
and the guide members at the other side of said path being separated from each other by a distance which is less than D.

4,352,449

FABRICATION OF CIRCUIT PACKAGES

Peter M. Hall, Emmaus; Frank L. Howland, Allentown; Joseph M. Morabito, Bethlehem, all of Pa., and Lawrence J. Rickabaugh, North Andover, Mass., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 26, 1979, Ser. No. 107,327
Int. Cl.³ B23K *1/02*; H01L *21/60*
U.S. Cl. 228—123 12 Claims



1. A method of fabricating a circuit package comprising the steps of providing an electrical macro-component (10 of FIG. 1) which includes a first set of contact pads (14) formed on one surface thereof, providing a supporting insulating substrate (20 of FIG. 3) which includes a second set of contact pads (25) formed on one surface thereof corresponding to the first set of contact pads on the macro-component, and bonding the macro-component to the substrate by soldering said sets of contact pads together, characterized in that said pads include a solder wettable layer of gold thereon, and said soldering is done by bonding large lead-tin solder preforms (16) onto one of said sets of contact pads, bringing the other set of contact pads into contact with the preforms, and bonding the preforms to the said other set of contact pads so that the weight of the macro-component is supported by the solder preforms while maintaining a gap between the macro-component and the substrate of at least 10 mils.

4,352,450

METHOD FOR SOLDERING ALUMINUM

Robert E. Edgington, 120 S. Genesse, Bellaire, Mich. 49615

Filed Sep. 19, 1980, Ser. No. 188,699
Int. Cl.³ B23K *1/02, 1/20*
U.S. Cl. 228—205 5 Claims

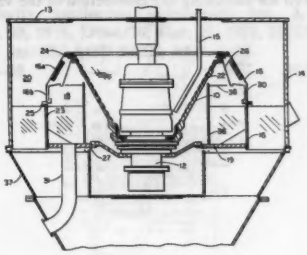
1. A method for soldering aluminum which includes the steps of heating at least one aluminum piece to a temperature within the range of 90°–150° C. cleaning at least one heated surface thereof, further heating the cleaned piece to a temperature within the range of 350°–490° C., applying to the cleaned and further-heated piece a coating, of a tin/lead/zinc alloy consisting essentially of from 1.7 to 2.2 percent aluminum, from 0.01 to 0.02 percent magnesium, from 45.9 to 50.4 percent zinc, from 14.2 to 34.0 percent tin, and from 16.6 to 36.7 percent lead, cleaning a surface of the applied alloy, cooling the coated piece to within the range of approximately 180°–300° C., and soldering the cleaned alloy surface with a lead-tin solder.

4,352,451

CENTRIFUGAL DRIER

Gerard Journet, Hellemmes Lille, France, assignor to Fives-Cail Babcock, Paris, France

Filed Sep. 25, 1980, Ser. No. 190,740
Int. Cl.³ B04B *7/00, 11/06*
U.S. Cl. 233—27 7 Claims



1. An apparatus for the continuous centrifugal separation of solids from a liquid, which comprises

(a) an upwardly and outwardly tapering conical bowl having an upper rim,

(b) a housing surrounding the bowl and defining a chamber,

(c) a vertical shaft mounted in the housing and supporting the bowl for rotation thereabout,

(d) a circular wall concentrically surrounding the bowl and separating the housing chamber into a first compartment receiving the liquid from the rotating bowl and a second compartment receiving the separated solids therefrom,

(e) a skirt surrounding an upper part of the bowl, the skirt having an upper part affixed to the upper bowl part and a lower part,

(f) an annular baffle affixed to the circular wall and extending between the circular wall and the lower skirt part,

(1) the circular wall, the skirt and the baffle defining an annular space in communication with the first compartment, rotation of the bowl and skirt affixed thereto causing the liquid to be forced centrifugally from the bowl into the first compartment and dropiets of the liquid to be suspended in an air current in the annular space, and

(g) a fibrous mat disposed in the annular space and surrounding the skirt, the mat being arranged to trap the suspended liquid droplets and permit the trapped liquid to run by gravity into the first compartment.

4,352,452

EMERGENCY CONTROLLER FOR AN AIR CONDITIONING SYSTEM OF AN AUTOMOTIVE VEHICLE

Yukio Shimada; Naoyoshi Suzuki; Toshio Ohashi, all of Yokohama, and Yasushi Inoshita, Tokyo, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Oct. 16, 1980, Ser. No. 197,694
Claims priority, application Japan, Oct. 22, 1979, 54-135181
Int. Cl.³ G05D *23/13*
U.S. Cl. 236—13 3 Claims

1. An emergency controller for an air conditioning system of an automotive vehicle incorporating an automatic electric temperature adjusting means connected to a vacuum control circuit, the vacuum control circuit being normally connected between a vacuum source and vacuum power servo, for performing a proportional control over an air mixing door, the emergency controller comprising:

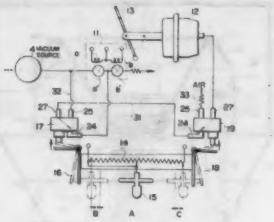
(a) a vacuum supply conduit connected directly to the vacuum source; and

(b) a first three-way vacuum switch connected to said vacuum supply conduit and vacuum control circuit for

switching the connection of the vacuum power servo from the vacuum control circuit to said vacuum supply conduit;

(c) a first switching member operatively connected to said first three-way vacuum switch for mechanically switching said first three-way vacuum switch;

(d) a second three-way vacuum switch connected to said first three-way vacuum switch and the vacuum power servo for switching the connection of the vacuum power



servo from said first three-way switch to an air opening conduit;

(e) a second switching member operatively connected to said second three-way vacuum switch,

said first and second switching members positioned for manual actuation by an operator of the vehicle for switching said first and second three-way vacuum switches upon failure of said automatic electric temperature adjusting means.

4,352,453

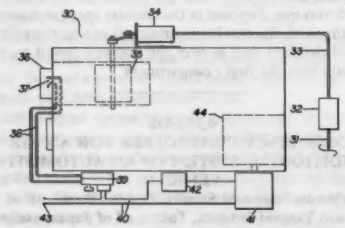
FAN CONTROL FOR VARIABLE AIR VOLUME TERMINAL UNIT

John C. McNabney, Harwinton, Conn., assignor to Interpace Corporation, Parsippany, N.J.

Filed Jan. 19, 1981, Ser. No. 226,567

Int. Cl.³ G05D *23/13*

U.S. Cl. 236—13 **3 Claims**



1. An air conditioning system terminal unit comprising:

a mixing box with a primary air inlet communicating with a source of pressurized air, a secondary air inlet, and an outlet;

an electric fan located at the outlet;

a throttling valve located at the primary air inlet;

throttling valve controls comprising means responsive to the temperature at a preselected location actuating the throttling valve; and

flow sensing means located in the primary air duct, ahead of the throttling valve, actuating the fan at a predetermined volume of primary air, independent of the throttling valve controls.

4,352,454

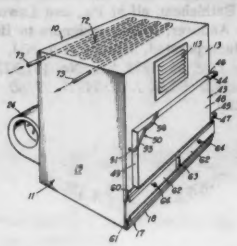
WOOD BURNING HEATER

James P. Ewing, 447 Tara Rd., Jonesboro, Clayton County, Ga. 30236

Filed Sep. 9, 1980, Ser. No. 185,491

Int. Cl.³ F24D *3/00*

U.S. Cl. 237—8 R **8 Claims**



1. A heater comprising an outer jacket, a fire box within said outer jacket, a common horizontal bottom panel for said jacket and said firebox said outer jacket and said fire box defining a plenum chamber therebetween, a plurality of horizontal rows of baffles spaced above and generally parallel to said base panel and within said plenum chamber, each of said baffles extending across said plenum chamber and being secured on opposite edges respectively to said jacket and said fire box, said baffles being disposed in vertically spaced rows, the ends of said baffles in each row being spaced from each other for defining a tortous air path through said plenum chamber, means for introducing air into said plenum chamber at the bottom rear portion thereof, said outer jacket being provided with port means at its top portion through which the air from said plenum chamber is discharged, a grate extending across the lower portion of said fire box, said grate being supported by its edges in spaced relationship above said bottom panel by said fire box said grate extending entirely across the bottom portion of the fire box, means for introducing air to the lower side of said grate, a flue extending through the rear portions of said outer jacket and said fire box for communicating with the upper portion of said fire box, said fire box being provided with an access opening and an access door for closing said access opening.

4,352,455

ARRANGEMENT FOR HEATING THE SERVICE CABIN OF A MACHINE DRIVEN BY AN INTERNAL COMBUSTION ENGINE

Gottfried Moser, Gladbach, and Hansjürgen Gross, Niederkassel, both of Fed. Rep. of Germany, assignors to Klockner-Humboldt-Deutz AG, Cologne, Fed. Rep. of Germany

Filed Feb. 20, 1980, Ser. No. 123,169

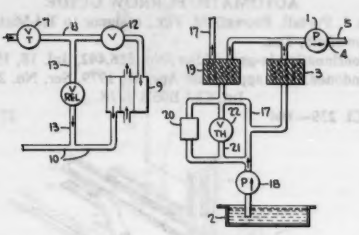
Claims priority, application Fed. Rep. of Germany, Aug. 10, 1979, 2932448

Int. Cl.³ B60H *1/14*

U.S. Cl. 237—12.3 R **9 Claims**

1. An arrangement for heating the operator's cabin of a motor vehicle powered by an internal combustion engine, comprising a lubricating system including a first lubricating oil pump operating at a predetermined lubricant pressure level for pumping oil from the engine oil sump into pressurized oil lines of the engine, a heating system including a second lubricating oil pump having a suction conduit connected to the engine oil sump, a supply conduit leading from the discharge side of the second pump to a heat exchanger provided for supplying heat to the operator's cabin, and a first return conduit leading from said heat exchanger to the oil sump, the improvement wherein an operating element is coupled into said supply conduit for reducing the pressure and elevating the temperature of the lubricating oil passing therethrough, and said second pump

having a capacity to produce a pressure of about one order of magnitude higher than said predetermined pressure level of said first pump, whereby the heat produced by said second



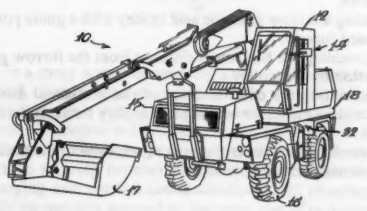
pump and by said operating element raises the temperature of the lubricating oil fed through said heat exchanger to thereby increase the heating efficiency of said heat exchanger.

4,352,456

CAB HEATING SYSTEM

Lloyd W. Brandenburg, Jr., Wausau, Wis., assignor to J. I. Case Company, Racine, Wis.

Filed Jun. 9, 1980, Ser. No. 157,878
Int. Cl.³ B60H *1/02*
U.S. Cl. 237—12.3 R **17 Claims**



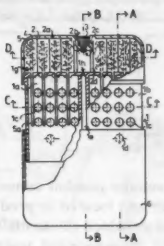
1. A cab heating system, comprising: a cab providing an operator compartment, at least one material handling implement remotely operable from said cab, a hydraulic circuit having hydraulic fluid circulating therethrough, said hydraulic circuit including hydraulic control means for selectively controlling movement of said material handling implement from said cab, a tank for supplying said hydraulic fluid and pump means for circulating said hydraulic fluid, said hydraulic fluid being heated by fluid friction during circulation and in response to operation of said hydraulic control means, a heat exchanger in proximity to said cab having a hydraulic fluid flow passageway in fluid communication with said hydraulic control means and at least one air flow passageway in communication with the interior of said cab, said heated hydraulic fluid flowing through said hydraulic fluid flow passageway and heating air flowing through said air flow passageway and fan means for propelling said heated air into the interior of said cab.

4,352,457

DEVICE FOR LONG-TERM EVAPORATION OF PERFUMES

Heinz H. Weick, 94 rue de la Servette, 1202 Geneva, Switzerland

PCT No. PCT/CH79100081, § 371 Date Jan. 30, 1980, § 102(e) Date Jan. 30, 1980, PCT Pub. No. WO80/00003, PCT Pub. Date Jan. 10, 1980
PCT Filed Jun. 1, 1979, Ser. No. 191,331
Claims priority, application Switzerland, Jun. 2, 1978, 6038/78; Dec. 23, 1978, 13066/78; Mar. 21, 1979, 2627/79
Int. Cl.³ A45D *34/00*; A61L *9/12*
U.S. Cl. 239—45 **16 Claims**



1. A device for long-term evaporation of liquid perfumes, particularly for placing in the pockets of garments and handbags, comprising a flat, plate-like basic member which encloses a perfume carrier and which has at least one wall having a porous evaporation region for evaporation purposes, the basic member **1**, **2** being provided with a reserve perfume chamber **2***a*, an evaporation chamber **1***a*, and at least one channel **1***g* for establishing communication between the reserve chamber and the evaporation chamber for the passage of perfume, a cover member **6** mounted on the basic member **1**, **2** and movable thereon in the manner of a slide between a sealing position, in which the porous evaporation region is covered, and at least one evaporating position, in which at least a portion of the porous evaporation region is uncovered, the cover member **6** being in the form of a sheath-like sleeve which is provided with an inwardly directed engaging cam **6***a* for the purpose of securing a plurality of evaporating positions, and by virtue of inherent resilience of the corresponding wall of the cover member, the engaging cam exerting a locking action in cooperation with a longitudinal row of evaporation openings **1***c* in the basic member **1**, **2**, the device including at least one wick-like perfume conductor **5** of compact, rod-like construction, extending through said channel **1***g* for the passage of perfume, a longitudinal portion **5***a* of the conductor **5** extending into the evaporation chamber **1***a* between front and rear walls **1***b* thereof and immediately acting as an evaporating perfume carrier, and the thickness of the conductor **5**, relative to the internal spacing between front and rear walls **1***b* of the evaporation chamber **1***a*, being such as to prevent any mutual contact between the perfume conductor portion **5***a* and the walls **1***b*.

4,352,458

SATURATED VAPOR GUN

Ruben Masel, Kiron, Israel, assignor to Koor Metals Ltd., Holon, Israel

Continuation of Ser. No. 871,938, Jan. 24, 1978, abandoned. This application Jul. 10, 1980, Ser. No. 167,353
Int. Cl.³ B05B *7/06*
U.S. Cl. 239—77 **9 Claims**

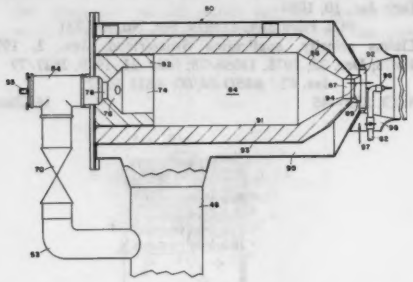
1. In vapor generating apparatus, a vapor generating gun comprising a combustion chamber; combustion chamber air and fuel inlets;

a combustion chamber outlet duct including an outlet nozzle having a circular cross section of reduced diameter through

which nozzle the hot gases produced in the combustion chamber exit in the form of a jet of hot gases;

a water spray generator located in said duct so that the water spray generated therein is at least partially vaporized by said exiting jet hot gases;

a source of pressurized air; and



a substantially annular conduit connected to said source of pressurized air and located to produce an annular stream of pressurized air which substantially envelopes said jet of hot gases and the vaporized water spray therein, condenses at least part of said vaporized water and entrains same within the jet of hot gases, and transports over substantial distances the jet of hot gases and entrained vaporized and condensed water.

4,352,459

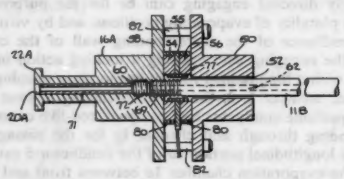
ULTRASONIC LIQUID ATOMIZER HAVING AN AXIALLY-EXTENDING LIQUID FEED PASSAGE

Harvey L. Berger, Poughkeepsie, and Charles R. Brandow, Highland, both of N.Y., assignors to Sono-Tek Corporation, Poughkeepsie, N.Y.

Continuation-in-part of Ser. No. 93,115, Nov. 13, 1979, abandoned. This application Dec. 3, 1979, Ser. No. 95,971

Int. Cl.³ B05B *17/06*

U.S. Cl. 239—102 **109 Claims**



78. A transducer for atomizing liquids comprising an atomizing section having an atomizing surface, driving means disposed adjacent to the atomizing section, the atomizing section and the driving means having a passage axially extending therethrough to the atomizing surface, a decoupling sleeve in the axially-extending passage in the atomizing section with one end thereof extending substantially to the atomizing surface, the axially-extending passage being adapted to receive a tubular member through which liquid can be introduced into the transducer and delivered through the decoupling sleeve to the atomizing surface, means provided in or adjacent to the atomizing section adapted to secure the tubular member to the atomizing section with one end of the tubular member adjacent to the other end of the decoupling sleeve, and means cooperating with the atomizing section spaced radially outwardly from the axially-extending passage for coupling the driving means and the atomizing section to atomize liquid delivered to the atomizing surface through the tubular member and the decoupling sleeve in response to electrical excitation of the driving means.

4,352,460

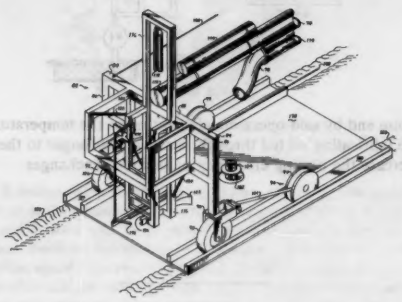
AUTOMATIC FURROW GUIDE

Rufus J. Purtell, Brownfield, Tex., assignor to Tri-Matic, Inc., Brownfield, Tex.

Continuation-in-part of Ser. No. 816,442, Jul. 18, 1977, abandoned. This application Apr. 11, 1979, Ser. No. 28,984

Int. Cl.³ B05B *3/18*

U.S. Cl. 239—184 **27 Claims**



1. In the process of operating an automatic irrigator which includes:

a. sprinking water from an elongated pipe upon a field to be irrigated,

b. moving said pipe traversely of its length through the field,

c. moving a trolley along a series of main valves,

d. attaching said trolley to said valves, and

e. opening said valves, thus

f. supplying water from the valves to the trolley and thus the elongated pipe;

the improved method of guiding the trolley to the valve comprising the steps of:

g. plowing a furrow adjacent to the valves along the series of valves,

h. placing a furrow guide on said trolley with a guide portion in said furrow,

i. determining the horizontal distance from the furrow guide portion to the trolley,

j. transmitting the determination of the horizontal distance to control means for moving said trolley through the field, and

k. controlling said control means in response to the horizontal distance determination.

4,352,461

HAND SIGNALS

Phillip N. Orta, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

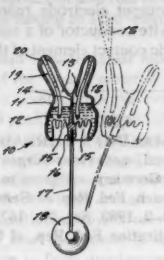
Filed May 9, 1980, Ser. No. 148,578

Int. Cl.³ B60R *15/00*

U.S. Cl. 239—211 **2 Claims**

1. An air refreshner device adapted for vibratory mobile mounting on the interior of an automotive vehicle comprising a container with a message thereon mounted at the top of a vibratory flexible rod which at its lower end is mounted on a suction cup, a liquid air refreshner inside said container and a plurality of openings at an upper end of said container for dispensing vapor from said refreshener outwardly of said container in combination with means responsive to rod vibration for pumping vapor through said openings, said container being hand shaped wherein the said means comprises a flexible bottom wall of said container secured centrally to said rod whereby vibratory rod movement causes alternating contrac-

tion and expansion of the container volume resulting in increased vapor outflow from said container wherein said container is divided by a central partition into two compartments each having an accordion pleated bottom wall at each side of said partition, said rod being connected to said partition.



4,352,462

SPRAY NOZZLE

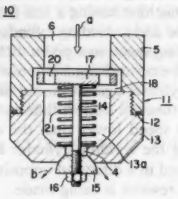
Masaru Watanabe, Fuchu; Takayoshi Amada, Yokohama, and Shinichi Yamaguchi, Tomioka, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Sep. 8, 1980, Ser. No. 184,981

Claims priority, application Japan, Sep. 10, 1979, 54-115164; Nov. 30, 1979, 54-155263

Int. Cl.³ B05B *1/32*

U.S. Cl. 239—266 **11 Claims**



1. In a spray nozzle comprising a nozzle structure having an internal chamber and an injecting hole provided at an outer end of the nozzle structure in communication with the internal chamber, a control rod provided in said internal chamber with an outer end thereof projecting outwardly through said injecting hole, a spring member provided in said internal chamber for urging said control rod inwardly in said chamber, and a nozzle tip member secured to the outer end of said control rod for closing the injecting hole from outside, the improvement wherein:

said nozzle structure comprises a stem member and a nozzle cap member detachably secured to said stem member so as to define said internal chamber within the two members;

said two members further define an increased diameter portion upwardly and downwardly delimited by annular surfaces extending transversely to said internal chamber;

a planar member having a diameter larger than that of the internal chamber is encased in said increased diameter portion so that said planar member is movable longitudinally in said increased diameter portion;

said planar member has a number of fluid passages formed therethrough and is secured perpendicularly to an upper end of said control rod extending longitudinally in said internal chamber;

said spring member is provided around said control rod between said planar member and a bottom surface of said internal chamber;

said control rod has a screw threaded portion at the outer end projecting outwardly through said injecting hole; and

means engageable with said screw-threaded portion of said control rod is further provided for securing said nozzle tip member to a desired portion of said control rod.

4,352,463

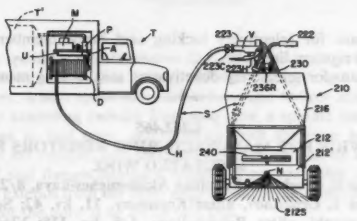
MOTORIZED COMBINATION WET AND DRY LAWN TREATMENT SPREADER

Douglas W. Baker, Kettering, Ohio, assignor to Leisure Lawn, Inc., Dayton, Ohio

Continuation-in-part of Ser. No. 4,585, Jan. 18, 1979, Pat. No. 4,234,131. This application Aug. 11, 1980, Ser. No. 177,109

Int. Cl.³ A01C *15/00*

U.S. Cl. 239—663 **8 Claims**



1. A spreader for application of both wet and dry lawn treatment material comprising in combination, a substantially rectangular base frame structure, a large capacity hopper with a bottom opening for passage of dry lawn treatment material, an engine carried at a rear location of said frame structure, a handle means with control means for the operation of the hopper, four wheels rotatably journalled with front and rear axle means on said frame structure, gear reduction means on one side of said engine, a belt-clutch coupling means suitably journalled to one side of said engine and gear reduction means, a power engagement control element extending along said handle means for on-off control of said belt-clutch coupling means, a first sprocket gear fixed on a shaft to which driving power is transmitted when said power engagement control element is actuated for "on" positioning, a second sprocket gear secured to the front axle means, a single chain drive means interconnecting said first and second sprockets, a wet treatment nozzle means and hose connection thereto mounted at least partially on said base frame structure in a location below and in front of said hopper, and a valve means mounted with said handle means for on-off control of wet treatment material to said hose and nozzle means for spraying thereof, said valve means having an on-off handle therewith adjoining said handle means, said valve means also having a quick disconnect hose connection therewith, and a hose means joined therewith between the spreader and a truck for wet and dry lawn treatment material.

4,352,464

IRRIGATION LINE WIND BRACE

Gail Cornelius, Portland, and Lloyd C. Olson, Beaverton, both of Oreg., assignors to R. M. Wade & Co., Portland, Oreg.

Filed Dec. 3, 1980, Ser. No. 212,279

Int. Cl.³ A01G *25/02*

U.S. Cl. 239—713 **15 Claims**

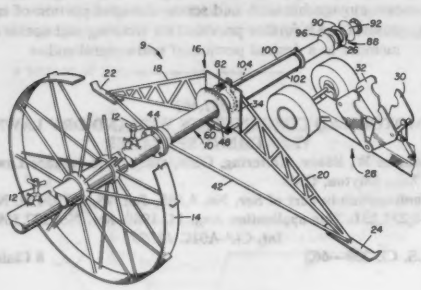
1. In an irrigation line supported by and having fixed relative thereto a plurality of wheels, the improvement comprising:

brace means for selectively preventing the irrigation line from moving including:

a brace member having a ground engaging member;

means for mounting said brace member to said irrigation line

so that said irrigation line is free to rotate relative to said brace member;



means for selectively locking said brace member to the irrigation line; and

means for selectively deactivating said locking means.

4,352,465

DEVICE FOR MANUFACTURING RESISTORS FROM INSULATED WIRE

Stepan S. Grechanliisky, ulitsa Akademiches-kaya, 8/2, kv. 15; Ivan I. Grishanov, ulitsa Kommuny, 11, kv. 42; Sergei N. Dimitraki, ulitsa Bubnovskogo, 5/5, kv. 118; Vladimir S. Miroshnichenko, ulitsa Belskogo, 24, kv. 25, and Vitaly I. Nastas, ulitsa Frunze, 104, all of Kishinev, U.S.S.R.

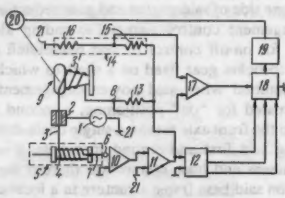
PCT No. PCT/SU80/00002, § 371 Date Sep. 8, 1980, § 102(e) Date Aug. 29, 1980, PCT Pub. No. WO80/01430, PCT Pub. Date Jul. 10, 1980

PCT Filed Jan. 8, 1980, Ser. No. 205,446

Claims priority, application U.S.S.R., Jan. 8, 1979, 2700553

Int. Cl.³ H01C *17/00, 17/22;* **H01F** *41/04*

U.S. Cl. 242—7.12 **3 Claims**



1. A device for manufacturing resistors from insulated wire comprising a take-up mechanism taking up unwound insulated wire and having electric contact elements and a drive; a securing mechanism securing a feed spool with an electric contact element; a harmonic generator; a current output electrode and a current input electrode providing capacitive coupling between a conductor of the unwound wire and said harmonic generator; a precision voltage divider; a reference resistor having a first pole connected to the electric contact element of the securing mechanism and a second pole connected to said precision voltage divider; a phase-sensitive indicator affecting said drive of said takeup mechanism and being electrically connected via its input to the contact element of the wire takeup mechanism and to a common tap of the precision divider; and a phase-inverting amplifier having an output connected to the second pole of the reference resistor and to the precision voltage divider; an electronic follower inserted between said electric contact element of said securing mechanism and a potential input of said phase-inverting amplifier; a clamping amplifier having a potential input connected to an output of the phase-inverting amplifier and an output coupled to said phase-sensitive indicator; a differential amplifier having a large input impedance and placed between a signal input of the phase-sensitive indicator and said electric contact element of said wire takeup mechanism and said precision divider; wherein the current output electrode represents a galvanic contact between the wire conductor of a resistor being manufactured and the electric contact element of the securing mechanism.

4,352,466

DEVICE FOR MAKING A THREAD RESERVE

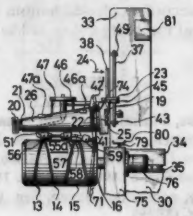
Hans Bäumges, Nettetal, and Hans-Jürgen Preuhs, Willich, both of Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Monchen-Gladbach, Fed. Rep. of Germany

Filed Jul. 9, 1980, Ser. No. 167,006

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1979, 2927742

Int. Cl.³ B65H *54/02, 67/04*

U.S. Cl. 242—18 PW **4 Claims**



1. Device for making a thread reserve on a coil tube in a thread winding machine having a coil frame for exchangeably holding a coil tube and a winding cylinder for rotating the coil tube at an operating speed in a given direction to form a take-up coil, said device comprising friction wheel means driveable by the winding cylinder against the surface of the coil tube for rotating the coil tube for a short time at initial winding of the take-up coil at a speed lower than the operating speed, and means for driving the winding cylinder at a speed lower than the operating speed in a direction opposite the given direction while the thread reserve is being made.

4,352,467

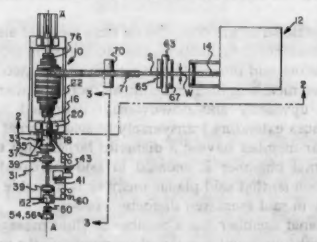
METHOD OF SPIRAL WINDING STRIP MATERIAL

William F. Dunn, and Ernest A. Milan, both of Stow, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jul. 14, 1980, Ser. No. 168,074

Int. Cl.³ B65H *17/02*

U.S. Cl. 242—55 **6 Claims**



1. A method of spiral winding strip material subject to induced curl from a letoff position onto a supply reel comprising

(a) laying an end of said strip material on the surface of said reel and continuously rotating said reel;

(b) providing forward axial movement of said reel relative to said letoff position in a first direction to spiral wind said strip on the surface of said reel to form a first layer of said strip material having an axial length less than the length of said reel;

(c) stopping said forward axial movement to form a first edge strip of the wound material;

(d) providing a reverse axial movement of said reel relative to said letoff position in a second direction opposite to said first direction to spiral wind said strip on the surface of said first layer to form a second layer of said strip material;

(e) stopping said reverse axial movement to form a second edge strip of the wound material;

(f) thereafter continuing to alternately provide said forward and reverse axial movement of said reel relative to said letoff position to form overlapping layers which are progressively of shorter length by reducing the number of revolutions of said reel for each overlapping layer providing at least one pyramidal edge with axially spaced edge strips; and

(g) continuing to rotate said reel for a predetermined rotation for each of said layers at said pyramidal edge when axial movement of said reel is stopped to provide supporting surfaces at said axially spaced edge strips and a minimum of curl of said strip material.

4,352,468

APPARATUS FOR THE UNINTERRUPTED WITHDRAWAL OF WEBS FROM REELS OF WEBS WHICH ARE TO BE UNWOUND SUCCESSIVELY

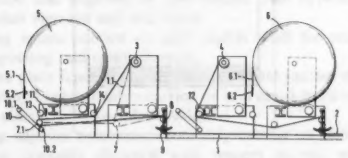
Richard Feldkämper, and Fritz Achelpohl, both of Lengerich of Westphalia, Fed. Rep. of Germany, assignors to Windmöller & Hölscher, Lengerich of Westphalia, Fed. Rep. of Germany

Filed Dec. 9, 1980, Ser. No. 214,730

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1979, 2950493

Int. Cl.³ B65H *19/16, 19/08*

U.S. Cl. 242—58.4 **14 Claims**



1. Apparatus for the uninterrupted withdrawal of webs from reels of webs which are to be unwound successively, the webs having adhesively coated leading web ends, said apparatus comprising bearing means for supporting the reels to be unwound alternately, guide means for guiding the webs running from the reels, and means for pressing to a web running from a depleting reel the adhesively coated leading web end of another reel, the another reel having been set in rotation to advance a lowered leading web end, said means for pressing comprising a belt (**10**) disposed beneath the leading end (**5.1, 6.1**) of the web running from another reel (**3, 4, 5, 6; 21, 22, 23, 24, 25, 26**), direction-changing rollers (**10.1, 10.2**) for guiding movement of said belt, said belt advancing the lowered leading web end (**6.1; 25.1, 26.1**), and pressing means comprising a backing roller (**7; 34, 38**) over which the web from the depleting reel (**3, 4; 22, 23, 24**) and the leading end taken along by the belt (**10**) pass in such a way that the backing roller and belt cooperate with each other to press the adhesively coated leading web end against the depleting web.

4,352,469

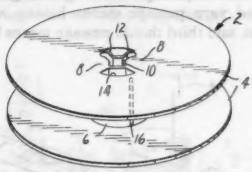
SPOOL FOR PHOTOGRAPHIC FILM

William V. Huck, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 13, 1981, Ser. No. 282,647

Int. Cl.³ B65H *75/18, 75/28*

U.S. Cl. 242—71.8 **7 Claims**



1. A spool for photosensitive film comprising a core having at least one hollow area therein, a slot extending lengthwise on the core, which opens into said at least one hollow area, two flanges extending radially from said core, a spindle receiving aperture in said core, and wherein both the core and the flanges are opaque, said spool being characterized by at least one of said flanges having a weakened or removable portion which extends from the outer edge of said at least one flange to intersect the core at or about said slot.

4,352,470

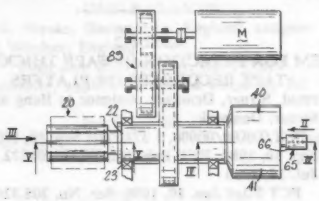
COMBINED PAYOFF AND WINDER FOR STRIP ROLLING MILLS

Frederick R. Blakeslee, Wallingford, Conn., assignor to Textron, Inc., Providence, R.I.

Filed Mar. 27, 1981, Ser. No. 248,572

Int. Cl.³ B65H *75/28*

U.S. Cl. 242—72.1 **7 Claims**



1. A convertible payoff and winder for strip metal comprising a mandrel, means for varying the diameter of the mandrel, and drive mechanism for said diameter varying means, the drive mechanism including means for expanding the mandrel into frictional engagement with the interior of a pre-wound coil of strip metal for operation in the payoff mode, means for arresting the expansion of the mandrel at a predetermined diameter for operation in the winding mode, and separate control means for said expanding means and said arresting means.

4,352,471

THREAD TENSIONING AND BRAKE DEVICE

John E. Zust, Rte. 1, Seay Rd., Spartanburg, S.C. 29302

Filed May 13, 1981, Ser. No. 263,276

Int. Cl.³ B65H *59/10, 59/36*

U.S. Cl. 242—147 R **8 Claims**

1. A thread tensioning device for tensioning thread traveling to a textile machine, comprising:

first thread passage means having a thread inlet and a thread outlet;

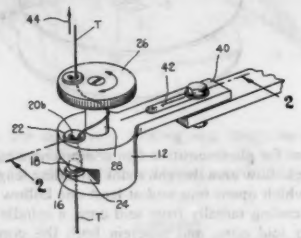
second thread passage means spaced generally above said

first passage means and in general axial alignment therewith having a thread inlet and outlet through which said yarn travels;

chamber means defined between said first and second passage means;

brake means carried in said chamber means between said first passage means and second passage means to brake the travel of thread therethrough;

a third thread passage means spaced generally above said second yarn passage means having a thread inlet and outlet, said third thread passage means being adjustable in



position relative to the axial alignment of said first and second thread passage means;

thread tensioning cylinder means carried intermediate said thread outlet of said second passage means and said threat inlet of said third passage means for contacting and tensioning said thread traveling to said machine;

means carrying said third yarn passage means for varying said position and amount of contact of said thread about said cylinder means and hence the tension thereof; and

said brake means braking said thread travel to maintain thread tight about said cylinder means during machine stoppage avoiding thread breakage upon start-up.

4,352,472

SYSTEM FOR DETECTION OF TAPE THICKNESS IN TAPE RECORDERS OR PLAYERS

Ivan Tyrsted, Struer, Denmark, assignor to Bang and Olufsen A/S, Struer, Denmark

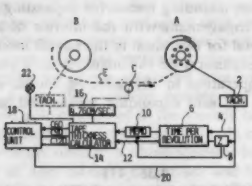
PCT No. PCT/DK80/00004, § 371 Date Sep. 10, 1980, § 102(e) Date Sep. 10, 1980, PCT Pub. No. WO80/01522, PCT Pub. Date Jul. 24, 1980

PCT Filed Jan. 10, 1980, Ser. No. 205,326

Claims priority, application United Kingdom, Nov. 1, 1979, 7901060

Int. Cl.³ G03B *1/04;* G11B *15/32;* B65H *59/38*

U.S. Cl. 242—186 **9 Claims**



1. A system for detection of the playtime type of a tape in tape players or recorders of the type having a means for detecting angular velocity of at least one reel and a main control means for effecting at least one of automatic control and display functions at least partially based upon the thickness of a tape being utilized, comprising:

control means for actuating said angular velocity detecting means during a first short interval of time and for subsequently reactuating said angular velocity detecting means during a second short interval of time;

memory means operatively associated with said angular velocity detecting means for receiving and storing an angular velocity output produced as a result of at least the actuation of the angular velocity detecting means during said first time interval;

playing velocity means for producing an output representative of the linear speed of said tape;

and

calculator means operatively associated with said memory means, said playing velocity means and said angular velocity detecting means for calculating the thickness of said tape based upon angular velocity output produced as a result of actuation of the angular velocity detecting means during both of said time intervals and upon linear speed output from said playing velocity means.

4,352,473

TAPE CASSETTE

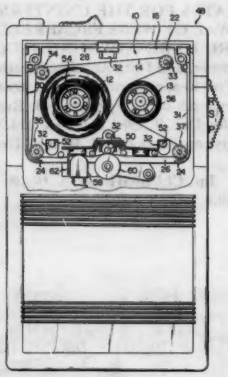
Ken Satoh, Akigawa; Seizo Watanabe; Sinichi Saitou, both of Hachioji; Toshikazu Kato, Hino; Ken Ohshima; Tsutomu Shibata, both of Hachioji, and Kenji Kimura, Tachikawa, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 21, 1980, Ser. No. 199,324

Claims priority, application Japan, Oct. 26, 1979, 54-148555[U]

Int. Cl.³ G03B *1/04;* G11B *15/32*

U.S. Cl. 242—199 **8 Claims**



1. In a tape cassette comprising a housing including a pair of spaced apart holding plates disposed in parallel with each other, a front wall coupling said pair of holding plates and having openings for the insertion of a magnetic head and a pinch roller, a rear wall facing said front wall and coupling said pair of holding plates, and a pair of side walls facing each other and coupling said pair of holding plates and said front and rear walls; a pair of reel hubs rotatably held by said pair of holding plates; and a magnetic recording tape wound around said pair of reel hubs, said magnetic recording tape running from one of said reel hubs and then along a path adjacent and along said front wall and then to the other of said reel hubs,

the improvement wherein said tape cassette further comprises:

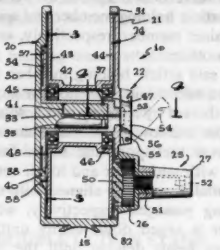
at least three guide rollers disposed inside said cassette housing and arranged to contact and guide the magnetic recording tape between said one reel hub and said path adjacent said front wall, said at least three guide rollers guiding the magnetic recording tape in a path to cross an imaginary line which intersects the rotation axes of said pair of reel hubs after the magnetic recording tape leaves

said one reel hub, said guide rollers further including position defining means for defining a position of the magnetic recording tape relative to said cassette housing across the thickness of said cassette housing while said tape is traveling from said one reel hub to said path adjacent and along said front wall.

4,352,474
DRAG CONTROL FOR FISHING REELS

Oscar Kovalovsky, 11154 Debby St., North Hollywood, Calif. 91606

Filed Jan. 30, 1981, Ser. No. 229,937
Int. Cl.³ A01K *89/02*
U.S. Cl. 242—218 8 Claims



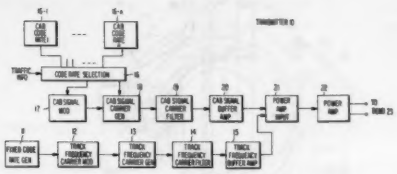
1. A fishing reel of the fly casting type comprising:
a frame having a stub shaft outwardly projecting from the center of a plate;
a ratchet member movably carried on said stub shaft including a ratchet shaft coaxially disposed on said stub shaft and a plurality of ratchet teeth provided along the periphery of said ratchet member;
at least one pawl operably carried on said frame plate adapted to engage with said ratchet teeth so as to allow rotation of said ratchet member in a predetermined direction;
a spool for holding a length of fishing line;
a friction disc disposed on said ratchet shaft between said ratchet member and said spool;
bearing means carried on said ratchet shaft for rotatably supporting said spool thereon;
a crank plate fixed to a selected end of said ratchet shaft;
a winding knob rotatably carried on said crank plate in close proximity to its peripheral edge;
a drag adjuster mechanism rotatably carried on said crank plate coaxially disposed with respect to said winding knob; and
a friction pad fixed on said drag adjuster mechanism for bearing against said spool adjacent its outer peripheral edge to forcibly urge said spool into retarded frictional engagement with said friction disc so as to place a desired tension on said fishing line during a fish catching procedure.

4,352,475
AUDIO FREQUENCY TRACK CIRCUIT FOR RAPID TRANSIT APPLICATIONS WITH SIGNAL MODULATION SECURITY

Barry L. Smith, and James R. Hoelscher, both of Rochester, N.Y., assignors to General Signal Corp., Stamford, Conn.

Filed May 23, 1980, Ser. No. 152,467
Int. Cl.³ B61L *21/00, 3/00*
U.S. Cl. 246—34 CT 7 Claims

1. An automatic protection system for trains traversing a plurality of uninsulated track sections along track rails comprising:
transmitting and receiving equipment spaced along said track rails, said transmitting equipment including;
a track frequency oscillator;
modulation means for modulating a signal produced by said track frequency oscillator only at a fixed code rate and producing a modulated track frequency signal;
cab signaling means producing selectively modulated cab signaling energy;
amplifying means for amplifying said modulated track frequency signal and said cab signaling energy;

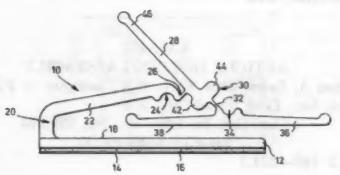


bond means for applying said amplified modulated track frequency signal to said track rails, said receiving equipment including:
decoder means responsive to signals derived from said track rails and tuned only to said fixed code rate, for producing a detectable output in response to detection of a signal at said fixed code rate, and
output means operated to a distinctive condition only in response to said detectable output from said decoder means.

4,352,476
CABLE CLAMPS

Alan M. G. Meeks, Basingstoke, England, assignor to ITW Limited, Windsor, England

Filed Jun. 25, 1981, Ser. No. 277,354
Claims priority, application United Kingdom, Jul. 1, 1980, 8021463
Int. Cl.³ F16L *3/08*
U.S. Cl. 248—74 R 12 Claims



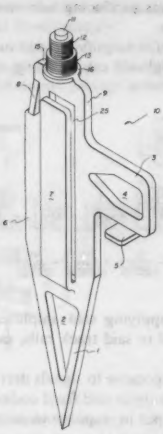
1. A cable clamp comprising a base and a pressure plate presenting respective opposed faces capable of lying generally parallel to one another for clamping a cable therebetween, a resilient arm joined at one end to said base and overhanging both the base and the pressure plate, a lever joined to the other end of said resilient arm and to said pressure plate pivotally movable between a releasing position and a clamping position for moving said pressure plate, in the absence of a cable, relative to the base with a toggle action, through a position of reduced separation between said opposed faces of the pressure plate and the base, said resilient arm and said pressure plate are formed with respective sockets for pivotally engaging with respective ends of a bearing member formed transversely to the length of the lever.

4,352,477

SUPPORT FOR HOLDING BRUSHES

Vern L. Garrett, and Morine V. Garrett, both of 863 18th Ave., Sweet Home, Oreg. 97386

Filed Aug. 11, 1980, Ser. No. 176,765
Int. Cl.[3] A46B 17/06
U.S. Cl. 248—156 7 Claims



1. A support for holding paint brushes, rollers and the like for cleaning, comprising in combination:

a spike means for insertion and retention in a penetrable substance,

a body extending upwardly therefrom of substantially rectangular configuration and said spike means has a top portion of substantially the same width, tapering downwardly to a point,

a purchase area extending outwardly from said body having a top face to assist in driving said spike means and a side face to abut against a brush in resisting water pressure,

a resilent clip means for carrying a brush handle, said clip means on said body comprising an outwardly offset strip overlying said body, said strip having a memory,

and a threaded area extending upwardly from said body to engage a complementally threaded roller handle,

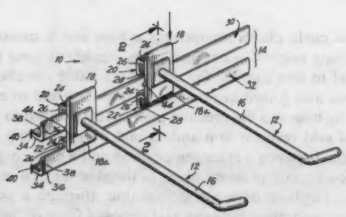
wherein a stop member is provided on a bottom edge of said purchase area.

4,352,478

ARTICLE HOLDING ASSEMBLY

Jonathan A. Loew, New York, N.Y., assignor to P.O.P. Displays, Inc., Long Island City, N.Y.

Filed Oct. 20, 1980, Ser. No. 199,294
Int. Cl.[3] A44B 13/00
U.S. Cl. 248—221.3 12 Claims



1. An article holding assembly comprising:

at least one article holding member including a base, and a pair of vertically spaced fastening elements affixed to one of said base side surfaces one above the other so as to define upper and lower fastening elements, each fastening element including an outwardly extending fastener web affixed to said base side surface, a fastener flange extending substantially downwardly from said web, and an inwardly directed fastener bead formed on said flange; and

an elongate retainer member to which said article holding member is adapted to be attached, said retainer member including a pair of vertically spaced, parallelly expending fastening rails located one above the other so as to define upper and lower fastening rails, each fastening rail including an outwardly extending elongate retainer web, an elongate retaining flange extending substantially upwardly from said web, and an inwardly directed retaining bead formed on said retaining flange; and

wherein the vertical distances between said fastener beads on an article holding member and said retaining beads on the retainer member, respectively, are substantially equal to each other;

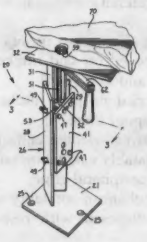
whereby said article holding member is adapted to be fastened to said retainer member at any location along the length thereof by locating said holding member such that the upper and lower fastening elements are located vertically over the upper and lower fastining rails, respectively, with said upper and lower retaining flanges being substantially vertically aligned with said upper and lower receiving passages, respectively, whereupon said hook member is urged downwardly until said retaining and fastening beads deform until the retaining beads pass through respective receiving passages.

4,352,479

ADJUSTABLE SUPPORT

Ivan B. Chapman, Jr., Baltimore, Md., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Mar. 6, 1980, Ser. No. 127,670
Int. Cl.[3] F16M 11/00
U.S. Cl. 248—405 2 Claims



1. Apparatus for adjustably supporting a work surface at a desired level above a floor at a work station, said apparatus comprising:

a base;

a post attached to and upstanding from said base, said post comprising a pair of plates connected together along longitudinal edges thereof;

a plurality of strips which are made of a plastic material and which are attached to an inwardly facing surface of each of said plates of said post;

a column which comprises a pair of elongated plates attached together along longitudinal edges, said column being in engagement with said plastic strips on the inwardly facing surfaces of said post;

a retainer plate extending at least partially along the length of said post;

a bearing device which includes a mounting bracket having spaced bearings attached thereto, said bearings engaging

inwardly facing surfaces of said elongated plates of said column;

means for securing said retainer plate to said post and for securing said bearing device to said retainer plate with said bearings in engagement with said column, said means being effective to hold said column in juxtaposition with said strips of plastic material and to facilitate movement of said column relative to said post to extend said column from said post and position the work surface at a desired level above the floor;

guide members which are attached to said retainer plate and spaced apart to be engaged by longitudinal free edges of said elongated plates of said column when said column is held in engagement with said plastic strips for preventing unintentional turning movement of said column when said column is extended from said post;

a support plate attached to an upper end of said column, said support plate adapted to have the work surface attached thereto;

internally threaded bushing means attached to said retainer plate;

a threaded rod extending through said bushing means and connected to said support plate; and

means for turning said threaded rod to cause said rod to be moved through said bushing means to move said support plate.

4,352,480

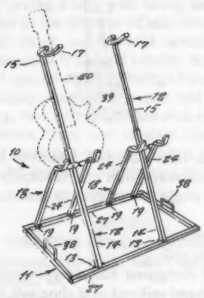
(PF-2) DOUBLE GUITAR STAND

Wayne R. Gathright, P.O. Box 3829, Austin, Tex. 78764

Filed Feb. 2, 1981, Ser. No. 230,325

Int. Cl.³ G10G *5/00*; A45C *11/00*; B65D *21/02*; A47G *19/00*

U.S. Cl. 248—443 **3 Claims**



1. A double guitar stand, comprising, in combination, a rectangular base frame, a plurality of extensible telescopic posts and braces hinged on said base frame, a rest unit and yoke on each said post for supporting a guitar thereupon wherein a plurality of said stands can be attached together by means of pins fitted between the said frame thereof.

4,352,481

APPARATUS AND METHOD FOR ELECTRONIC DAMPING OF RESONANCES

Robert L. Forward, Oxnard, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Mar. 13, 1980, Ser. No. 129,861

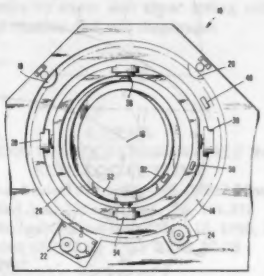
Int. Cl.³ F16M *13/00*

U.S. Cl. 248—550 **5 Claims**

1. An apparatus for the damping of resonance in a system comprising:

a gimbal structure having at least first and second axes and having at least first and second movable mechanical members respectively movable on said first and second axes, a positioner and a resolver connected to each of said first and second movable mechanical members for positioning and determining the position thereof said positioners and said resolvers being electromechanical devices with a mechanical portion thereof connected to said mechanical members, said positioners and said resolvers being positioned away from each other;

first and second control servo loops respectively connected with said positioner and resolver of said first and second mechanical members; and



first and second vibration sensing transducers respectively attached to said first and second mechanical members, said first and second vibration sensors being respectively connected to said first and second servo loops for connecting the vibration signals from said vibration sensing transducers into said electronic control servo loop for damping vibration inside said gimble structure, said connection of said transducers to said servo loops including a phase shifter and an amplifier.

4,352,482

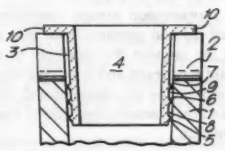
HOT TOPS

Paul F. Duvall, Medina, Ohio, assignor to Foseco Trading AG, Chur, Switzerland

Filed Apr. 7, 1980, Ser. No. 137,782

Int. Cl.³ B22D *7/10*

U.S. Cl. 249—106 **5 Claims**



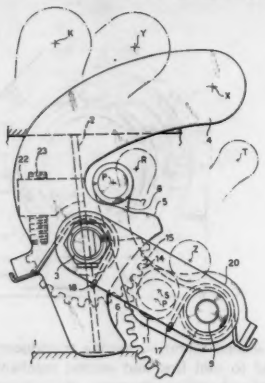
1. An assembly for casting metal ingots comprising: an ingot mould and a hot top lining in the mouth of said mould, said lining comprising: a plurality of refractory, heat-insulating lining slabs having a predetermined thickness and positioned in contact with the inner surface of the walls of the mouth of said mould; at least one of the said slabs having, at its outward-facing surface and adjacent to its lower edge, at least two ribs having a predetermined height and width such that said ribs extend horizontally across said slab and protrude from said outward-facing surface a distance corresponding to said predetermined height, and into contact with the mould walls, and characterized as being disposed and arranged progressively to inhibit upward flow of molten metal behind said slab, said ribs being of the same material as and integral with said slab.

4,352,483

DIFFERENTIAL THROTTLE OPENING CONTROL MECHANISM

Stefano Iacoponi, Turin, Italy, assignor to Fiat Auto S.p.A., Turin, Italy

Filed Feb. 28, 1980, Ser. No. 125,385
Claims priority, application Italy, Jun. 5, 1979, 68205 A/79
Int. Cl.³ F16K *31/524, 31/53*
U.S. Cl. 251—229 **7 Claims**



1. A differential opening control mechanism for controlling the angular displacement of a throttle valve which determines the air flow in an induction manifold of an internal combustion engine, comprising:

a spindle connected to said throttle valve for pivotally supporting said throttle valve,

a first lever pivoted on said spindle intermediate the ends thereof and adapted to be connected to one end thereof to linkage means the movement of which is controlled by an accelerator pedal of said engine, means defining first and second cam profiles on said first pivoted lever,

a support shaft disposed in spaced parallel relation to said spindle,

a second lever pivoted on said support shaft,

first and second cam follower means on said second pivoted lever, operatively associated with said first and second cam profiles respectively, and

movement transmission means operatively connected between said second pivoted lever and said throttle valve whereby the angular displacement of said valve follows that of said first lever and is related thereto by a relationship determined by the shape of said first and second cam profiles and the transmission ratio of said movement transmission means.

4,352,484

SHEAR ACTION AND COMPRESSION ENERGY ABSORBER

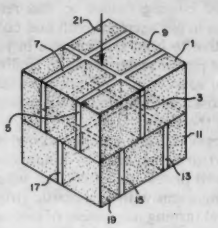
David C. Gertz, Citrus Heights, and Owen S. Denman, Sacramento, both of Calif., assignors to Energy Absorption Systems, Inc., Chicago, Ill.

Filed Sep. 5, 1980, Ser. No. 184,236
Int. Cl.³ E01F *15/00*
U.S. Cl. 256—13.1 **16 Claims**

1. An energy absorbing apparatus comprising:

a plurality of energy absorbing sheets arranged in a stacked relation for compressing and cutting into one another to dissipate the energy of an impact force, each sheet having an array of intersecting walls for defining a plurality of cell areas, and

filler means for filling said cell areas and adapted to deform to absorb the energy of the impact force and to support said walls so that the edges of the walls of abutting sheets



cut into one another and into said filler means in response to said impact force, to dissipate the energy of the impact.

4,352,485

VARIABLE RACK STAIR RAIL ASSEMBLY

Gene Basey, Rowland Heights, Calif., assignor to Zenith Stairways & Bldg. Products, Inc., Walnut, Calif.

Filed Jun. 6, 1980, Ser. No. 157,186
Int. Cl.³ E04H *17/14*
U.S. Cl. 256—65 **22 Claims**

18. A variable rake stair rail assembly having a predetermined normal stairway pitch and susceptible of being racked by a small acute angle to a steeper or less steep pitch, comprising:

a wooden hand rail;

a wooden shoe rail;

a plurality of elongated balusters extending vertically between said hand rail and said shoe rail, the ends of each of said balusters being cut at an angle to the axis of the baluster substantially conforming to said normal stairway pitch;

means defining recessed surface areas in said hand rail and said shoe rail opposing the ends of said balusters and extending substantially parallel to said ends of said balusters; and

means for mounting said balusters onto said hand rail and said shoe rail with the ends of said balusters close to but spaced from the opposed recessed surface areas, said mounting means including high strength deformable mechanical means secured to both the ends of said baluster and to said rails, said mechanical means holding said assembly at each joint thereof to provide the normal pitch for a stairway with the balusters vertical, said spacing between said ends of said balusters and said recessed surface areas being substantially that required to permit racking of said stair rail assembly to increase or reduce the pitch of said stair rail assembly by said small acute angle by the flexing of said deformable mechanical means;

whereby the preassembled stair rail assembly may be employed with stairways of normally varying pitches with the balusters extending vertically and the spacing between the ends of the balusters and the opposing surfaces in the

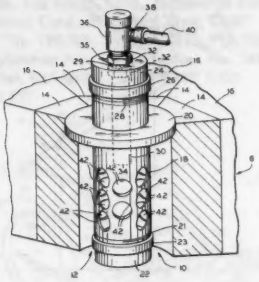
hand and shoe rails being concealed by the enclosing recesses in the hand and shoe rails.

4,352,486

PRESSURE PROBE FOR METALLURGICAL VESSELS

Dennis L. Hixenbaugh, Pittsburgh, Pa., assignor to Pennsylvania Engineering Corp., Pittsburgh, Pa.

Filed Apr. 2, 1981, Ser. No. 250,235
Int. Cl.[3] C21B *7/24*; G01L *19/06, 7/00*
U.S. Cl. 266—99 **4 Claims**



1. A pressure probe in combination with a refractory lining of a metallurgical vessel, said refractory being arranged to define an opening for receiving said probe,

said probe including a tubular housing disposed within and spaced from the surface of the refractory defining said opening to provide a gap therebetween,

said housing having a side wall facing said gap and an inner end exposed to the interior of said furnace, closure means closing the inner end of said housing, pressure probe means disposed within said tubular housing,

a plurality of spaced apart openings formed in the side wall of said housing and opening into said gap,

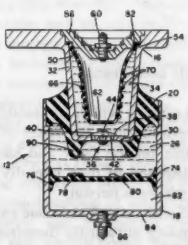
the refractory, said closure means and said side wall shielding said probe from any straight line path within said vessel, said openings being arranged to permit said probe to sample the pressure within said vessel.

4,352,487

VISCOUS SPRING DAMPER

Emile M. Shtarkman, Norwalk, Ohio, assignor to Gould Inc., Rolling Meadows, Ill.

Filed Nov. 18, 1980, Ser. No. 207,909
Int. Cl.[3] F16F *3/08, 9/04*
U.S. Cl. 267—35 **5 Claims**



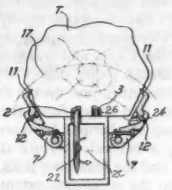
1. In a viscous spring damper including inner and outer members connected by an elastomeric shear spring, having a main fluid chamber therebetween communicating with a second chamber in said inner member through restricted orifice means, and having an expandible and contractible gas chargeable elastomeric bladder in said second chamber, and a first valve means for selectively charging said bladder with gas pressure, the improvement comprising: an elastomeric diaphragm in said main fluid chamber having means associated therewith for providing fluid ports between said diaphragm and said inner member, said inner member having stop means extending therefrom towards said outer member and wherein said stop means are positioned for engaging said means on said diaphragm during telescoping movement of said members, and a second valve means for selectively charging said diaphragm with gas pressure whereby relative movement between said members operates to stress said shear spring and vary the volumes of said bladder and said diaphragm.

4,352,488

LOG CLAMPING DEVICES USED IN HALF ROUND OR STAY LOG CUTTING

Angelo Cremona, Viale Lombardia, 275, 20052 Monza, Italy

Filed Jun. 20, 1980, Ser. No. 161,311
Claims priority, application Italy, Mar. 13, 1980, 20574 A/80
Int. Cl.[3] B23Q *1/00*; B27B *29/08*
U.S. Cl. 269—54.2 **7 Claims**



1. A log clamping device for use in half round or stay log cutting of logs having a support surface and a pair of axial grooves in the support surface, comprising:

a rectangular cross-sectioned bar having two wide sides and two narrow sides, rotatable about a rotation axis which is parallel to a a major axis of the bar;

at least one fixed toothed element extending from one narrow side of said bar;

at least one movable toothed element movably mounted to said bar extending from one narrow side at a location spaced from said toothed element, each of said fixed and movable elements having teeth facing each other and adapted to extend into respective axial grooves of a log with the log supporting surface supported on said one narrow side, said movable element movable to reduce the spacing between teeth on said fixed and movable elements to clamp the log to said bar;

a shaft connected to each wide side of said bar extending parallel to said rotation axis and disposed between said rotation axis and a plane containing said one narrow side;

at least two toothed dogs connected to each shaft, each having a length so as not to extend beyond the other of said narrow sides with said dogs pivoted about said shaft against each respective wide side and away from said plane containing said one narrow side; and

drive means connected to said shafts for rotating said shafts and moving said toothed dogs into engagement with the log clamped to said bar, to further clamp the log to said bar, and for moving said toothed dogs against their respective wide sides;

each toothed dog having a log engaging tooth which is wedge-shaped and inclined so as to draw the support surface of the log firmer into engagement with said one narrow side, with increased engaging force between each dog tooth and the log.

4,352,489

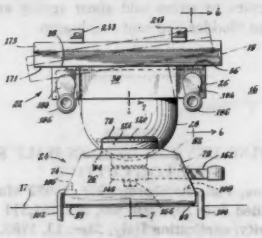
SMALL COMPACT LIGHTWEIGHT PORTABLE VISE SUITABLE FOR USE BY MODEL MAKERS AND HOBBYISTS

Robert P. Wagster, Greensboro, Md., assignor to Black & Decker Inc., Newark, Del.

Continuation of Ser. No. 42,778, May 29, 1979, abandoned. This application Oct. 15, 1980, Ser. No. 197,062

Int. Cl.[3] B23Q *1/04*

U.S. Cl. 269—75 5 Claims



1. A small compact lightweight portable vise suitable for use by model makers and hobbyists, comprising a frame having a pair of substantially-flat top coplaner surfaces spaced from one another, a pair of elongated clamping jaws supported longitudinally on top of the frame and transversely of the coplanar surfaces thereof, means fixing one of the jaws to the frame, means mounting the other jaw on the frame for non-parallel movement towards and away from the fixed jaw, whereby tapered objects may be clamped between the jaws, the top of the frame having a central aperture disposed between the coplanar surfaces and the clamping jaws, the aperture extending substantially to the maximum extent of opening between the clamping jaws, a member secured to the frame and depending below the aperture, the member being substantially coterminous with the aperture, whereby an odd-shaped enlarged workpiece may be received within the member and yet may be clamped between the jaws, the member having a lowermost convex portion, a base having a complementary concave portion for supporting the member thereon, whereby the frame and hence the clamping jaws may be swivel adjusted with respect to the base, and means for clamping the member to the base in a desired adjusted position.

4,352,490

DEFLECTING DEVICE FOR SORTER OR THE LIKE

Noboru Hatakeyama, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Nov. 24, 1980, Ser. No. 210,136

Claims priority, application Japan, Nov. 27, 1979, 54-153384

Int. Cl.[3] B65H *29/58*

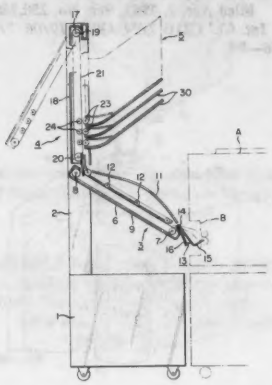
U.S. Cl. 271—289 5 Claims

1. In a sheet sorter including sheet sorting means, sheet receiving and transporting means for conveying sheets to the sorting means, and a main tray overlying the receiving and transporting means for receiving sheets in stacked relation thereon,

sheet deflecting means at a sheet inlet end of the receiving and transporting means and comprising an upper plate and a lower plate positionally fixed in spaced apart relation to each other, said deflecting means being pivotally movable between a first position in which sheets input to the sorter are directed by said deflecting means onto the main tray and wherein said upper plate forms a substantially smooth continuation of the main tray to partially support sheets received in stacked relation on the main tray, and a second position in which sheets input to the sorter are directed by said deflecting means to the receiving and transporting means for conveyance to the sorting means, and

drive means connected to said deflecting means for moving the same between said first and second positions thereof so that sheets input to the sorter are caused to be either stacked on the main tray or conveyed to the sorting means, respectively,

said upper plate of the deflecting means being so configured that when said upper plate forms a substantially smooth continuation of the main tray in said first position of said



deflecting means to partially support sheets stacked on the main tray said upper plate supports only a relatively small portion of the stacked sheets with respect to that portion supported by the main tray so as to facilitate free movement of said deflecting means to its second position while partially supporting sheets thereon.

4,352,491

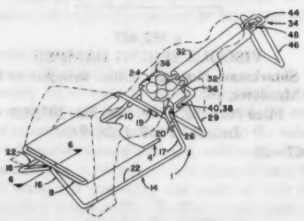
EXERCISE TABLE

Ferdinando Bellia, 51 Regina Rd., Monsey, N.Y. 10952

Filed Jun. 13, 1980, Ser. No. 159,009

Int. Cl.[3] A63B *23/00*

U.S. Cl. 272—144 12 Claims



1. An exercise table comprising:

a. support means;

b. a flat semi-rigid support which is rotatably affixed at each end to said support means, the latter of which supports said exercise table on the floor and said flat semi-rigid support being disposed to rock laterally on said support means when in use by a person;

c. a rigid cushion fixedly attached to one end of said support means and extending outwardly therefrom;

d. a plurality of rigid cushion support means affixed in said rigid cushion with a portion of said rigid cushion support means exposed for cradling the spine in the neck and back of a person on said flat semi-rigid support; and

e. tubing extending from said rigid cushion and pivotably secured to said rigid cushion at an extension of said tubing so as to be foldable onto said flat semi-rigid support, said

tubing having a pair of spaced apart soft alignment sleeves secured on said tubing;

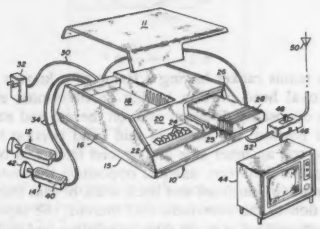
said exercise table provides a person using the same with a means of relieving tension by relaxing the back and neck muscles while relaxing any spinal misalignments developed from tension, poor posture or muscle strain.

4,352,492

DATA STORAGE APPARATUS

Ronald A. Smith, Los Gatos, Calif., assignor to Fairchild Camera & Instrument Corp., Mountain View, Calif.

Division of Ser. No. 716,909, Aug. 23, 1976, Pat. No. 4,095,791.
This application Nov. 26, 1976, Ser. No. 745,025
Int. Cl.[3] B63B 71/04; A63F 9/00
U.S. Cl. 273—1 GC 21 Claims



1. A data storage cartridge means for use in apparatus for the playing of video games and the like, said apparatus including a console means having signal-generating and processing means and a chute for receiving said data storage cartridge means, said chute having connector means pivotally mounted and rotatable between a cartridge-engaging position and a cartridge-connection position and including a pair of end portions each having a camming surface and an elongated central portion forming a connector slot with a plurality of upstanding resilient contact members extending upwardly through the bottom of said central portion, said central portion having a chamferred surface to provide ease of entry for an end portion of a circuit-board means, said end portion engaging said chamferred surface upon insertion of said cartridge and facilitating pivoting of said connector means, said elongated central portion of said connector means including an alignment key means which divides said central portion into two sections, said chute including a closure assembly for locking an inserted cartridge means in said chute, said closure assembly having an elongated door which is rotatably mounted to rotate open upon insertion of a cartridge means, and an outwardly-extending detent rib for rotation into engagement with an inserted cartridge, said cartridge means including housing means having a bottom surface with slot means which engages said detent rib to latch said cartridge means within said chute,

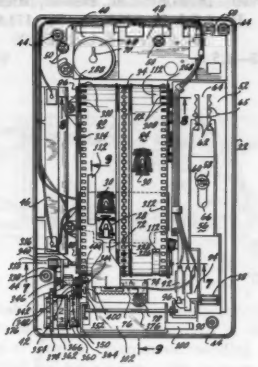
said data storage cartridge means comprising circuit-board means having a plurality of contacts on an end portion for mating with contacts of said connector means, means for engaging said connector means and pivoting said connector means upon insertion of said cartridge means in said chute whereby said connector means, engages said contacts of said circuit-board means, said end portion being insertable into said connector whereby said plurality of upstanding resilient contact members engage said contacts on said board means, and said board including a notched portion for mating with said alignment key means to facilitate alignment of said board means in said elongated central portion.

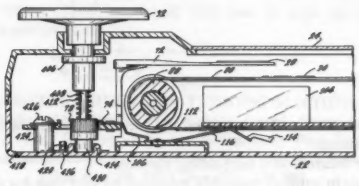
4,352,493

PORTABLE OBSTACLE TOY

Hiroyuki Watanabe, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan

Continuation of Ser. No. 971,464, Dec. 21, 1978, Pat. No. 4,231,571. This application Nov. 3, 1980, Ser. No. 202,887
Claims priority, application Japan, Dec. 28, 1977, 52-157850
The portion of the term of this patent subsequent to Nov. 4, 1997, has been disclaimed.
Int. Cl.[3] A63F 9/14
U.S. Cl. 273—1 GA 4 Claims





1. A toy game of skill which comprises:

a base;

an orbiting support member, said orbiting support member having a substantially continuous surface, support member mounting means attached to said base, said orbiting support member attaching to said support member mounting means;

driving means mounted on said base, said drive means connecting to and orbiting said orbiting support member in a path around said support member mounting means such that said substantially continuous surface of said orbiting support member orbits around said mounting means;

said orbiting support member including at least one obstacle means on said surface of said support member, said obstacle means repeatedly orbiting about said orbiting support means;

an object member slidably mounted on said base proximal to said surface of said orbiting support member and including an object member moving means for moving said object member in respect to said surface of said orbiting support member;

said object member moving in respect to said surface of said support member and including an interference position between said object member and said obstacle means;

detecting means for detecting when said object member is in said interference position with said obstacle means, said detecting means including an opening located in said surface of said support member and a sensor means located in association with said surface of said support mem-

ber and capable of interacting with said opening when said object member is in said interference position with said obstacle means, said sensor means independent from said object member;

said detecting means including a drive disengagement means capable of disengaging said drive means from orbiting said orbiting support member when said object means is in said interference position.

4,352,494

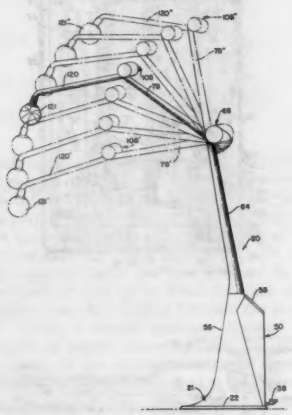
REACTION DEVELOPMENT APPARATUS

Alfred A. Wells, 15700 Steel St., Detroit, Mich. 48227

Filed Jul. 24, 1980, Ser. No. 171,673

Int. Cl.³ A63B *5/16, 69/00*

U.S. Cl. 273—1.5 A **4 Claims**



4. A reaction development and physical training apparatus, comprising:

a base located on a supporting surface;

an upright support rotatably mounted on said base for rotation about a substantially vertical axis;

an articulated arm assembly, including primary and secondary arms;

said primary arm having a first end connected by primary pivot means to the upper end of said support assembly for movement primarily in a vertical plane for controlling generally vertical movement of said articulated arm assembly in a generally vertical plane toward and away from said supporting surface;

said secondary arm having one end connected by a secondary pivot means to the free end of said primary arm for controlling movement of said secondary arm relative to said first arm;

retainer means releasably retaining a ball-like object to the free end of said primary arm;

actuating means controlling and varying the relative movement of said primary and secondary arms and rotational movement of said upright support; and

a programmable control center providing a programed sequence of instruction to said actuating means, controlling the rotational movements of said upright support and the pivotal movement of said articulated arm assembly;

the apparatus characterized in that the rotational movement of said upright support and the pivotal movement of said articulated arm assembly cause said ball-like object to move in predetermined paths of travel to accomodate users of different heights, ages, coordination levels and the like, while the user attempts to grasp and remove the ball-like object from said retaining means during said predetermined travel.

4,352,495

TENNIS RACKET

Tony F. Marchionda, 708 Fifth St., Struthers, Ohio 44471

Filed Feb. 9, 1981, Ser. No. 232,719

Int. Cl.³ A63B *49/02*

U.S. Cl. 273—73 C **2 Claims**

1. In a tennis racket having a frame of a known thickness with an oval head portion having an outermost end and a handle in oppositely disposed relation thereto and stringing in said head portion, the frame in said head portion having an outer side and an inner side and spaced front and back walls extending therebetween, unequal oppositely disposed tapered areas formed in said front and back walls of said frame in said head portion in the outermost end thereof, the tapered areas joining one another in sharp angular relation and defining said outer side of said head portion in said outermost end so that the frame in the tapered area is thin and pointed at its outer side and of said known thickness at its inner side, said tapered area in said front wall being substantially greater than the tapered area in said back wall so as to form a substantially longer incline in said front wall for a ball rolling toward said racket and up said incline onto said stringing.

4,352,496

PLASTIC AND METAL TARGET PIGEON

Ludovico Lante-Montefeltro Della Rovere, 171 Spring Hill Rd., Trumbull, Conn. 06611

Continuation-in-part of Ser. No. 65,467, Aug. 10, 1979, Pat. No. 4,335,882, which is a continuation-in-part of Ser. No. 921,006, Jun. 30, 1979, Pat. No. 4,206,919, which is a continuation-in-part of Ser. No. 762,019, Jan. 24, 1977, Pat. No. 4,133,532, and a continuation-in-part of Ser. No. 882,907, Mar. 1, 1978, Pat. No. 4,274,636, and a continuation-in-part of Ser. No. 892,921, Mar. 3, 1978, Pat. No. 4,218,061. This application Oct. 15, 1980, Ser. No. 197,126

Int. Cl.³ F41J *9/16*

U.S. Cl. 273—363 **10 Claims**

1. A target pigeon comprising:

a generally flat web formed at a web axis with a central throughgoing hole and having a pair of diametrically opposite ends;

a pair of vanes on said web extending diametrically oppositely from said ends thereof and tipped propeller-fashion to each other;

a pair of diametrically opposite holding tabs on said ends of said webs directed generally axially and tipped inwardly toward each other, said vanes, web, and tabs being inte-

grally formed and together having a predetermined relatively great mass; and

a cup-shaped witness cap having an axially directed and substantially circular annular rim centered on a cap axis and formed with a pair of diametrically opposite outwardly open notches, said rim being axially engageable with said ends of said web inwardly of said tabs with said tabs fitting in said notches, said cap having a predetermined relatively small mass equal to at most one-eighth of said great mass.

4,352,497

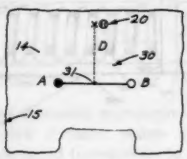
FOOTBALL (SOCCER) GAME WITH MOBILE GOALS

Norwood R. Warehime, 704 W. 34th St., Baltimore, Md. 21211

Filed Dec. 12, 1980, Ser. No. 215,649

Int. Cl.³ A63B *71/02, 63/04*

U.S. Cl. 273—411 **4 Claims**



1. Football (soccer) game with mobile goals comprising two footballs (soccer balls), one of which includes indicia designating the team "A" goal and one of which includes different indicia designating the team "B" goal, with a 2 to 10 yds (mts) tether therebetween, a free football (soccer ball), a playing surface, and a playing area, whereby competing teams can play a modified version of conventional football (soccer) game.

4,352,498

SPRING SEAL

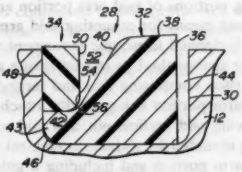
John A. Burke, Rocky River, Ohio, and James B. Gross, Lansdale, Pa., assignors to Greene, Tweed & Co., Inc., North Wales, Pa.

Division of Ser. No. 53,883, Jul. 2, 1979, Pat. No. 4,229,013.

This application Mar. 7, 1980, Ser. No. 128,063

Int. Cl.³ F16J *15/00*

U.S. Cl. 277—1 **3 Claims**



1. A method comprising the steps of providing an annual seal assembly including a sealing ring and a back-up ring with the assembly having a generally trianular opening between said rings on its inner periphery, placing said assembly in a stationary rectangular groove having an axial length greater than the axial length of the assembly so as to provide a space on the high pressure side of the groove, deforming the sealing ring radially outwardly by contact between the outer periphery of a piston and a surface on the sealing which tapers from the high pressure side to said triangular opening, decreasing the size of said opening by said deforming step, using a piston whose outer diameter is greater than the inner diameter of the sealing ring tapered surface in the relaxed state of the sealing ring, applying pressure to the piston and to said space so that said sealing ring deforms axially into and occupies said triangular opening and biases said back-up ring radially inwardly, releasing pressure on said piston and seal assembly, and using said sealing ring as a return spring for retracting the piston a predetermined amount as said sealing ring returns to its original cross-sectional shape as deformed by the outer periphery of said piston.

4,352,499

HYDRAULIC PUMP WITH PISTON SEALING

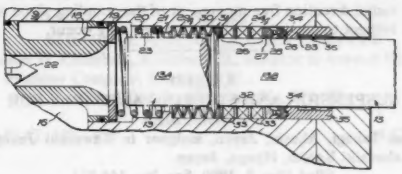
Malcolm C. Foster, Wakefield, England, assignor to Fletcher Sutcliffe Wild Limited, United Kingdom

Filed Nov. 28, 1979, Ser. No. 97,986

Claims priority, application United Kingdom, Nov. 28, 1978, 46371/78

Int. Cl.³ F16J *15/48*

U.S. Cl. 277—59 **11 Claims**



1. A reciprocable piston hydraulic pump provided with a piston periphery sealing means comprising, at the pressure side, a first seal of flexible material surrounding said piston periphery, a second seal having a moulded pressure seal, a ring separating said first seal from said pressure seal, a reservoir defined between said first seal and said pressure seal, said spring means operable on said first seal to urge the latter towards said pressure seal.

4,352,500

CLAMPING CHUCK FOR TURNING MACHINES

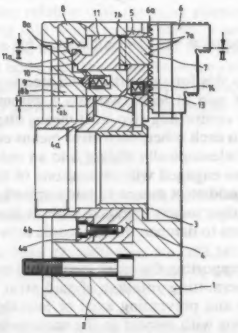
Hans Blättry, Meerbusch, and Herbert Antoni, Grevenbroich, both of Fed. Rep. of Germany, assignors to Paul Forkardt Kommanditgesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Jan. 29, 1981, Ser. No. 229,397

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1980, 3005459

Int. Cl.³ B23B *31/14*

U.S. Cl. 279—121 **6 Claims**



1. In a chuck for lathes having a chuck body in which at least two clamping jaws which can be jointly actuated by a drive member are guided in radially displaceable manner, said jaws comprising in each case a drive jaw part which is continuously in operative connection with the drive member and a clamping jaw part which is guided for radial movement independently of

the drive jaw part within the chuck body and can be connected in form-locked manner with the drive jaw part by a coupling piece arranged in the drive jaw part, the form-locked engagement of said coupling piece with the clamping jaw part being adapted to be released via positive guide surfaces by a spring-biased actuating member which is movable substantially radially and independently of other actuating members, the improvement comprising

an intermediate member is displaceably mounted in the chuck body,

said actuating member is arranged in the chuck body and is operatively connected with said intermediate member via the positive guide surfaces,

said coupling piece is displaceably mounted in a direction of action and is connected in form-locked manner with said intermediate member in the direction of action of said coupling piece and is radially and displaceably mounted relative to said intermediate member, whereby in the radial direction free movement of the coupling piece with respect to the intermediate member may occur.

4,352,501

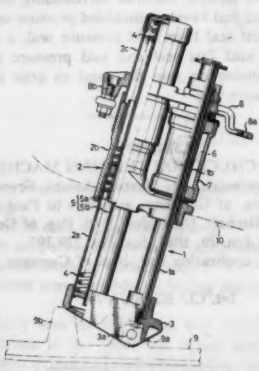
SUSPENSION AND STEERING ASSEMBLY FOR SNOWMOBILE

Izumi Takagi, Akashi, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Hyogo, Japan

Filed May 5, 1980, Ser. No. 146,911

Int. Cl.³ B62B *13/08*

U.S. Cl. 280—16 **6 Claims**



1. A suspension and steering system for a snowmobile comprising:

at least two skis for supporting and steering the snowmobile;

for each of said at least two skis a suspension and steering assembly comprising two strut means disposed substantially parallel to each other, each strut means comprising an inner member telescopically sliding into an outer member;

spring means engaged with at least one of the two strut means to cause said strut means to telescopically expand;

shock absorber means engaged with at least one of the two strut means to dampen the telescopic movement of said strut means;

means for supporting the outer member of one of said two strut means, permitting rotation of said strut means around its own axis and preventing axial or lateral movement of said strut means with respect to the snowmobile;

steering means in one of said assemblies rigidly connecting the outer members of both strut means to cause the two strut means to rotate about the axis of the strut means engaged with the supporting means, said steering means adapted to receive a steering rod connected to a steering gear and a tie rod connected to the other suspension and steering assembly; and

ski mounting means for pivotally connecting the ski to both of the two inner strut members of both strut means in a rigidly fixed relationship, in which said ski mounting means is pivotally connected to the ski at one point and laterally retained between members secured to the ski at another point.

4,352,502

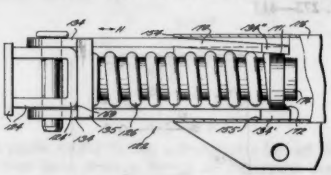
SUPPORT ASSEMBLY FOR MUD-FLAPS

Charles F. Leonard, P.O. Box 99, Rte. 1, Star, Id. 83669; Claude H. Leonard, deceased, late of Star, Id., and legal representative Leonard, P.O. Box 8891, Boise, Id. 83707

Continuation-in-part of Ser. No. 869,761, Jan. 16, 1978, Pat. No. 4,189,165. This application Dec. 31, 1979, Ser. No. 109,196

Int. Cl.³ B62D *25/16*

U.S. Cl. 280—154.5 R **10 Claims**



1. A mud-flap supporting assembly, for mounting a mud-flap on a vehicle, comprising a horizontally disposed mounting arm adapted to have a mud-flap attached thereto; means for mounting said mounting arm to a vehicle at an attachment point, including means for substantially preventing movement of said arm in a vertical direction, and means for providing pivotal movement of said arm about a vertical axis adjacent the operative attachment point of the arm to the vehicle; said means for providing pivotal movement of said arm about a vertical axis including a vertical pin, an arm portion for receipt of said pin, and a support portion adapted to be connected to the vehicle for receipt of said pin, said pin passing through said arm portion and said support portion;

spring means operatively connected between said arm and arm portion for centering said arm so that it is normally in a first position but may pivot against the bias of said spring means about said vertical axis out of the first position and so that it will be automatically returned by said spring means to the first position; said means for preventing movement of said arm in a vertical direction comprising interfering portions of said arm portion and said support portion, and means for mounting said arm and arm portions for horizontal telescopic movement with respect to each other against the bias of said spring means;

said arm portion comprising first and second arm portions, said first arm portion being rigidly attached to said arm and receiving said vertical pin, and said second arm portion being mounted for slidable movement with respect to said first arm portion and including a guide member received by a bushing operatively connected to said first arm portion and said arm to provide said telescopic movement of said second arm portion with respect to said arm;

said second arm portion further comprising an end plate portion affixed to said guide member and having surface portions thereof engaging said first arm portion for providing slidable movement therebetween, and said second arm portion having a flat end face portion for abutting said support portion under the bias of said spring means, said support portion being flat at a major area of engagement between it and said end plate and having edge portions for engaging said end plate during pivoting of said arm and spring means comprising; and

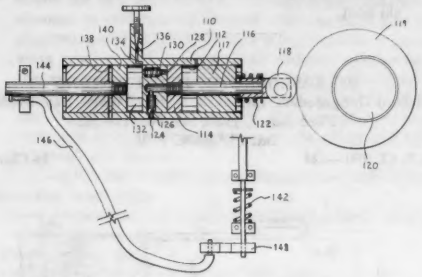
a coil spring surrounding said guide member and operatively engaging said arm bushing for receipt of said guide member, and said second arm portion end plate.

4,352,503

AUTOMATIC TRANSMISSION SHIFTER FOR BICYCLES

James F. Cotter, 105 Crown Ct., Lancaster, Ohio 43130

Filed Jun. 18, 1980, Ser. No. 160,653
Int. Cl.³ B62M *25/08*
U.S. Cl. 280—238 **3 Claims**



1. An improved automatic transmission for a human powered vehicle which includes pedals drivingly connected through a variable speed transmission to a wheel, a movable shift member for changing the ratio of the transmission and a speed sensing means linked to said shift member for shifting the transmission ratio in response to vehicle speed wherein the improvement comprises a speed sensing means including:

(a) a fluid pump drivingly connected to said vehicle for pumping fluid at a rate which is a function of vehicle speed said pump including a reciprocating piston-like member connected through a piston rod to an eccentric cam and cam follower mechanism linked to a wheel of said vehicle and biased into engagement;

(b) a container having a chamber connected to said pump through the outlet check valve of said pump for receipt of pumped fluid, said chamber having a vent;

(c) fluid pressure responsive means connected in communication with said chamber and having an actuator which moves in proportion to fluid pressure said pressure responsive means comprising a piston-like member reciprocally mounted in a mating cylinder, one end of said cylinder forming said chamber and means for biasing said piston like member toward said one end, said actuator being a piston rod connected to said piston-like member; and

(d) linkage means linked to said shift member and said actuator for moving said shift member in proportion to the movement of said actuator for shifting the ratio of said transmission.

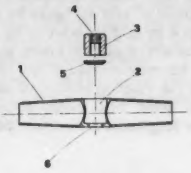
4,352,504

REAR BRAKE HOLDER FOR BICYCLES

Adriano Pianalto, Vicentino, Italy, assignor to Gipiemme s.r.l., Camisano Vicentino, Italy

Filed Apr. 28, 1980, Ser. No. 144,586
Claims priority, application Italy, May 3, 1979, 64269/79[U]; Jun. 7, 1979, 64283/79[U]
Int. Cl.³ B62K *19/38*
U.S. Cl. 280—281 R **2 Claims**

1. In a strut for the brake of a bicycle, the combination which comprises an integral body including a hollow central portion and a pair of hollow, lateral portions connected each to said central portion is oppositely extending relation; and a threaded bushing completely received in an opening of said central



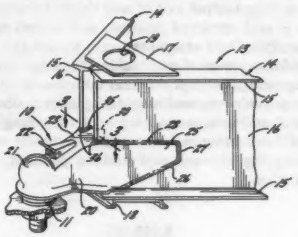
portion, said bushing being disposed to receive a threaded bolt extending into said opening to support said brake.

4,352,505

STRADDLE MOUNT TRAILER COUPLER

James W. Chambers, Rockford, Ill., assignor to Atwood Vacuum Machine Company, Rockford, Ill.

Filed Dec. 3, 1980, Ser. No. 212,698
Int. Cl.³ B60D *1/06*
U.S. Cl. 280—495 **6 Claims**



1. A coupler for connecting a trailing vehicle to a hitch ball on a towing vehicle, the trailing vehicle having a frame which includes a pair of forwardly projecting upright plates spaced laterally from one another at their forward ends, said coupler comprising a body having a downwardly opening socket at the forward end portion thereof for receiving said ball, a pair of laterally spaced wings projecting rearwardly from said body and straddling said plates with the inner sides of said wings lying in face-to-face relation with the outer sides of said plates, means for securing said wings to said plates, a generally horizontal tongue located between said wings and projecting rearwardly from said body into the space between said plates, and welds extending along the outer margins of said tongue and the inner sides of said plates and joining said tongue to said plates.

4,352,506

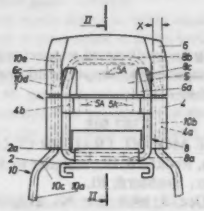
SKI BRAKE

Josef Svoboda, Schwechat, and Friedrich Leichtfried, Traiskirchen, both of Austria, assignors to TMC Corporation, Baar, Switzerland

Filed May 27, 1980, Ser. No. 153,243
Claims priority, application Austria, Jul. 9, 1979, 4784/79
Int. Cl.³ A63C *7/10*
U.S. Cl. 280—605 **11 Claims**

1. In a ski brake having at least one braking leg pivotal by a force applied by a ski boot or by a sole plate secured to a ski boot to a pedal about an axle extending substantially at a right angle with respect to the longitudinal axis of a ski in a mounting member adapted to be secured to said ski, said braking leg being pivotal between a braking position and a retracted position, an erecting spring resisting a pivoting of said braking leg toward said retracted position, said braking leg having a brak-

ing mandrel thereon and a first segment therein which extends from said braking mandrel toward the central longitudinal axis of the ski, said braking leg being held totally above the upper surface of said ski and between the lateral edges of said ski in the retracted position of said ski brake by said pedal which is stepped down upon by said ski boot or by said sole plate, and in the braking position of said ski brake, said braking mandrel being positioned laterally outside of one of said ski edges and projecting below the running surface of said ski, said braking leg being pivotal about first means defining a swivel shaft which extends in longitudinal direction of said ski, said first



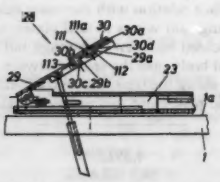
means including at least one further second segment on said braking leg which extends substantially parallel with respect to said central longitudinal axis of said ski brake when said braking leg is in said retracted position, and second means operatively connecting said second segment to said axle to facilitate said pivotal movement of said braking leg about the axis of said second segment, the improvement comprising wherein third means are provided on said braking leg intermediate said braking mandrel and said second segment for engaging a lateral edge of said mounting member and guiding the movement of said braking leg between said braking position and said retracted position.

4,352,507

SOLE-SUPPORT MECHANISM

Erwin Krob, Vienna, and Josef Svoboda, Schwechat, both of Austria, assignors to TMC Corporation, Baar, Switzerland

Division of Ser. No. 55,337, Jul. 6, 1979, Pat. No. 4,288,093. This application Mar. 26, 1981, Ser. No. 247,693
Claims priority, application Austria, Jul. 7, 1978, 4928/78
Int. Cl.[3] A63C *11/00*
U.S. Cl. 280—605 **8 Claims**



1. A sole support mechanism for the sole of a ski boot secured to a ski between a toe jaw and a heel holder, comprising:

guide rail means adapted to be mounted on said ski;

guide plate means mounted for reciprocal movement on said guide rail means, said heel holder being fixedly mounted on said guide plate means for movement therewith, said heel holder including means adapted to engage and hold said sole of said ski boot;

first resilient means operatively connected to said guide plate means and said guide rail means for urging said guide plate means toward said toe jaw; and

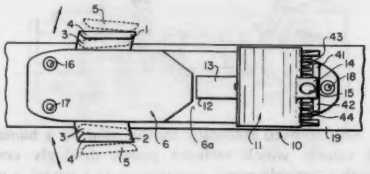
stepping plate means on said guide plate means for supporting the heel portion of the sole of said ski boot during changes in the spacing between said toe jaw and said heel holder in response to a flexing of said ski with no relative longitudinal movement occurring between the sole of said ski boot and said stepping plate means, said stepping plate means including a ski brake pedal supported for movement between a braking position and a retracted position and including means on the upper side of said pedal for reducing friction between said pedal and the sole of said ski boot.

4,352,508

RELEASABLE STEP-IN SKI BINDING

Richard G. Spademan, Box 6410, Incline Village, Nev. 89450

Filed Jan. 7, 1980, Ser. No. 110,222
Int. Cl.[3] A63C *9/08*
U.S. Cl. 280—624 **16 Claims**



1. A releasable ski binding including a clamping member movable between an opened and a closed condition and being coupled to an elongated force unit for providing a clamping force for releasably securing a ski boot to a ski rearward of the toe and forward of the rear of the heel of the ski boot when the clamping member is in its closed condition comprising:

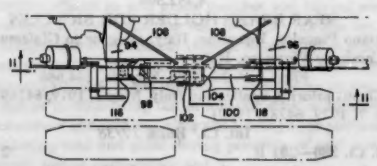
means for mounting said force unit on said binding with its longitudinal axis transverse to the longitudinal axis of the binding; means coupling said force unit to said clamping member for biasing said clamping member to its closed condition; and step-in means shiftably mounted on said binding for releasably holding the clamping member in its opened condition when the step-in means is at a first position on the binding, said step-in means being movable to a second position in response to a ski boot placed in skiing position on the binding to release said clamping member and allow it to move to its closed condition under the bias action of said force unit.

4,352,509

DAMPED RUBBER TIRED VEHICLE SUSPENSION

H. Neil Paton, 2521 W. Montlake Pl. East, Seattle, Wash. 98112; E. Frederick Gylland, Jr.; Jeffrey P. Sandys, both of Seattle, Wash., and John B. Skilling, 3000 Webster Point Rd., Seattle, Wash. 98105, assignors to H. Neil Paton and John B. Skilling, both of Seattle, Wash.

Division of Ser. No. 870,500, Jan. 18, 1978, abandoned. This application Oct. 11, 1979, Ser. No. 83,756
Int. Cl.[3] B60G *13/02*; B61F *5/34, 5/52*
U.S. Cl. 280—716 **20 Claims**



1. A rubber tired vehicle suspension, comprising:

moveable load arm means for supporting an axle with respect to a rubber tired vehicle body;
a spring element;
means connected with the body forming a frictional damping surface;
a damping element; and
force resolving means carried by said load arm means between the axle and the body for supporting said spring element in load bearing relation with the body and for supporting said damping element in frictional force generating relation with said frictional damping surface such that said spring element will be compressed while simultaneously therewith said damping element will be urged into frictional engagement with said frictional damping surface in response to relative movement of the body and said load arm means.

17. A variable rate friction damper for a rubber tired vehicle suspension, comprising:
means connectable with a rubber tired vehicle body forming a frictional damping surface;
a damping element;
spring means for supporting said body; and
force resolving means positionable in load transmitting relation between a vehicle axle and the body for supporting said spring means in load bearing relation with the body and for supporting said damping element in frictional force generating relation with said frictional damping surface such that said spring means will be compressed while simultaneously therewith said damping element will be urged into frictional engagement with said frictional damping surface in response to relative movement of the body and the vehicle axle.

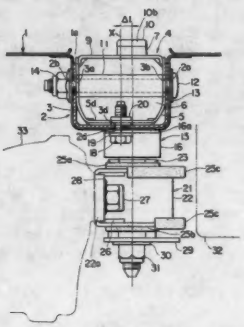
18. A rubber tired vehicle suspension having two relatively moveable arm assemblies, comprising:
moveable load arm means for supporting one of the two assemblies;
a spring element;
means in force transmitting relation with the other of the two assemblies forming a frictional damping surface;
a damping element; and
force resolving means carried by said load arm means between the two assemblies for supporting said spring element in load bearing relation with said other assembly and for supporting said damping element in frictional force generating relation with said frictional damping surface such that said spring element will be compressed while simultaneously therewith said damping element will be urged into frictional engagement with said frictional damping surface in response to relative movement of the two assemblies.

4,352,510
SUPPORT BRACKET

Yoshihiro Saito, Yokohama; Shigeru Sakai, Fujisawa, and Tsuneo Endo, Yokohama, all of Japan, assignors to Nissan Motor Company, Ltd., Yokohama, Japan

Filed May 30, 1979, Ser. No. 43,700
Claims priority, application Japan, Jun. 2, 1978, 53-74512[U]
Int. Cl.³ B60S *5/00*
U.S. Cl. 280—727 **5 Claims**

1. For use in mounting a unit on a vehicle, the combination comprising:
an elongated channel member fixed to the vehicle, said channel member having first base and opposed side wall portions;
an elongated bracket having second base and opposed side wall portions, said bracket being dimensioned for removable seating within said channel member, with said bracket and said channel member being arranged symmetrically with respect to a common central reference plane parallel to said first and second side wall portions, with said second side wall portions being confined between said first side wall portions, and with said second base portion overlying said first base portion;
means on said bracket for supporting a carrier bolt vertically with respect to said first and second base portions and laterally of said central reference plane, with a portion of said carrier bolt protruding through aligned openings in said first and second base portions;
detachable fastening means extending through said channel member and said bracket for fixing said bracket to said channel member; and

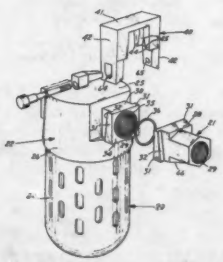


connecting means for connecting the unit to the protruding portion of said carrier bolt externally of both said channel member and said bracket, the position of said unit in relation to said vehicle being adjustable by detaching said fastening means and reversing the orientation of said bracket relative to said channel member to shift the position of said carrier bolt from one to the other side of said central reference plane.

4,352,511
RELEASABLE CLAMP FOR MODULAR CONNECTOR

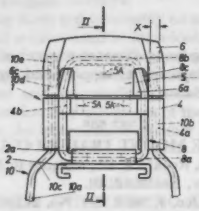
Franklin Ribble, Arvada, and William E. Huber, Englewood, both of Colo., assignors to Wilkerson Corporation, Englewood, Colo.

Filed Feb. 17, 1981, Ser. No. 234,702
Int. Cl.³ F16L *15/00*
U.S. Cl. 285—91 **1 Claim**



1. A clamping structure for releasably securing together two pressure fluid conducting components in sealed relationship, each component having means thereon defining a sealing surface including a pressure fluid port therein and adapted for juxtaposed sealing engagement with a corresponding sealing surface on the other component, transversely extending flanges adjacent each of said sealing surfaces and defining on each component coplanar cam surfaces sloping away from the adjacent sealing surface, means defining a wedge surface on at least of one of said components below and generally transverse to said sloping cam surfaces, a yoke having spaced parallel

ing mandrel thereon and a first segment therein which extends from said braking mandrel toward the central longitudinal axis of the ski, said braking leg being held totally above the upper surface of said ski and between the lateral edges of said ski in the retracted position of said ski brake by said pedal which is stepped down upon by said ski boot or by said sole plate, and in the braking position of said ski brake, said braking mandrel being positioned laterally outside of one of said ski edges and projecting below the running surface of said ski, said braking leg being pivotal about first means defining a swivel shaft which extends in longitudinal direction of said ski, said first



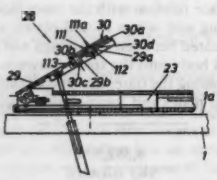
means including at least one further second segment on said braking leg which extends substantially parallel with respect to said central longitudinal axis of said ski brake when said braking leg is in said retracted position, and second means operatively connecting said second segment to said axle to facilitate said pivotal movement of said braking leg about the axis of said second segment, the improvement comprising wherein third means are provided on said braking leg intermediate said braking mandrel and said second segment for engaging a lateral edge of said mounting member and guiding the movement of said braking leg between said braking position and said retracted position.

4,352,507

SOLE-SUPPORT MECHANISM

Erwin Krob, Vienna, and Josef Svoboda, Schwechat, both of Austria, assignors to TMC Corporation, Baar, Switzerland

Division of Ser. No. 55,337, Jul. 6, 1979, Pat. No. 4,288,093. This application Mar. 26, 1981, Ser. No. 247,693
Claims priority, application Austria, Jul. 7, 1978, 4928/78
Int. Cl.³ A63C *11/00*
U.S. Cl. 280—605 **8 Claims**



1. A sole support mechanism for the sole of a ski boot secured to a ski between a toe jaw and a heel holder, comprising:

guide rail means adapted to be mounted on said ski;

guide plate means mounted for reciprocal movement on said guide rail means, said heel holder being fixedly mounted on said guide plate means for movement therewith, said heel holder including means adapted to engage and hold said sole of said ski boot;

first resilient means operatively connected to said guide plate means and said guide rail means for urging said guide plate means toward said toe jaw; and

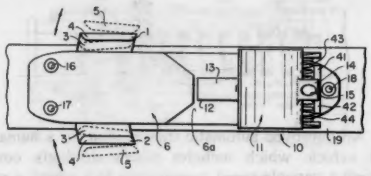
stepping plate means on said guide plate means for supporting the heel portion of the sole of said ski boot during changes in the spacing between said toe jaw and said heel holder in response to a flexing of said ski with no relative longitudinal movement occurring between the sole of said ski boot and said stepping plate means, said stepping plate means including a ski brake pedal supported for movement between a braking position and a retracted position and including means on the upper side of said pedal for reducing friction between said pedal and the sole of said ski boot.

4,352,508

RELEASABLE STEP-IN SKI BINDING

Richard G. Spademan, Box 6410, Incline Village, Nev. 89450

Filed Jan. 7, 1980, Ser. No. 110,222
Int. Cl.³ A63C *9/08*
U.S. Cl. 280—624 **16 Claims**



1. A releasable ski binding including a clamping member movable between an opened and a closed condition and being coupled to an elongated force unit for providing a clamping force for releasably securing a ski boot to a ski rearward of the toe and forward of the rear of the heel of the ski boot when the clamping member is in its closed condition comprising:

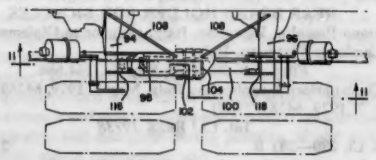
means for mounting said force unit on said binding with its longitudinal axis transverse to the longitudinal axis of the binding; means coupling said force unit to said clamping member for biasing said clamping member to its closed condition; and step-in means shiftably mounted on said binding for releasably holding the clamping member in its opened condition when the step-in means is at a first position on the binding, said step-in means being movable to a second position in response to a ski boot placed in skiing position on the binding to release said clamping member and allow it to move to its closed condition under the bias action of said force unit.

4,352,509

DAMPED RUBBER TIRED VEHICLE SUSPENSION

H. Neil Paton, 2521 W. Montlake Pl. East, Seattle, Wash. 98112; E. Frederick Gylland, Jr.; Jeffrey P. Sandys, both of Seattle, Wash., and John B. Skilling, 3000 Webster Point Rd., Seattle, Wash. 98105, assignors to H. Neil Paton and John B. Skilling, both of Seattle, Wash.

Division of Ser. No. 870,500, Jan. 18, 1978, abandoned. This application Oct. 11, 1979, Ser. No. 83,756
Int. Cl.³ B60G *13/02*; B61F *5/34, 5/52*
U.S. Cl. 280—716 **20 Claims**



1. A rubber tired vehicle suspension, comprising:

moveable load arm means for supporting an axle with respect to a rubber tired vehicle body;

a spring element;

means connected with the body forming a frictional damping surface;

a damping element; and

force resolving means carried by said load arm means between the axle and the body for supporting said spring element in load bearing relation with the body and for supporting said damping element in frictional force generating relation with said frictional damping surface such that said spring element will be compressed while simultaneously therewith said damping element will be urged into frictional engagement with said frictional damping surface in response to relative movement of the body and said load arm means.

17. A variable rate friction damper for a rubber tired vehicle suspension, comprising:

means connectable with a rubber tired vehicle body forming a frictional damping surface;

a damping element;

spring means for supporting said body; and

force resolving means positionable in load transmitting relation between a vehicle axle and the body for supporting said spring means in load bearing relation with the body and for supporting said damping element in frictional force generating relation with said frictional damping surface such that said spring means will be compressed while simultaneously therewith said damping element will be urged into frictional engagement with said frictional damping surface in response to relative movement of the body and the vehicle axle.

18. A rubber tired vehicle suspension having two relatively moveable arm assemblies, comprising:

moveable load arm means for supporting one of the two assemblies;

a spring element;

means in force transmitting relation with the other of the two assemblies forming a frictional damping surface;

a damping element; and

force resolving means carried by said load arm means between the two assemblies for supporting said spring element in load bearing relation with said other assembly and for supporting said damping element in frictional force generating relation with said frictional damping surface such that said spring element will be compressed while simultaneously therewith said damping element will be urged into frictional engagement with said frictional damping surface in response to relative movement of the two assemblies.

4,352,510

SUPPORT BRACKET

Yoshihiro Saito, Yokohama; Shigeru Sakai, Fujisawa, and Tsuneo Endo, Yokohama, all of Japan, assignors to Nissan Motor Company, Ltd., Yokohama, Japan

Filed May 30, 1979, Ser. No. 43,700

Claims priority, application Japan, Jun. 2, 1978, 53-74512[U]

Int. Cl.³ B60S *5/00*

U.S. Cl. 280—727 **5 Claims**

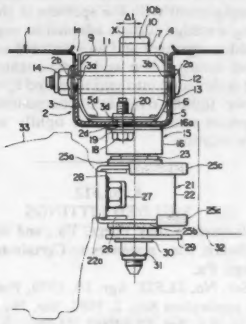
1. For use in mounting a unit on a vehicle, the combination comprising:

an elongated channel member fixed to the vehicle, said channel member having first base and opposed side wall portions;

an elongated bracket having second base and opposed side wall portions, said bracket being dimensioned for removable seating within said channel member, with said bracket and said channel member being arranged symmetrically with respect to a common central reference plane parallel to said first and second side wall portions, with said second side wall portions being confined between said first side wall portions, and with said second base portion overlying said first base portion;

means on said bracket for supporting a carrier bolt vertically with respect to said first and second base portions and laterally of said central reference plane, with a portion of said carrier bolt protruding through aligned openings in said first and second base portions;

detachable fastening means extending through said channel member and said bracket for fixing said bracket to said channel member; and



connecting means for connecting the unit to the protruding portion of said carrier bolt externally of both said channel member and said bracket, the position of said unit in relation to said vehicle being adjustable by detaching said fastening means and reversing the orientation of said bracket relative to said channel member to shift the position of said carrier bolt from one to the other side of said central reference plane.

4,352,511

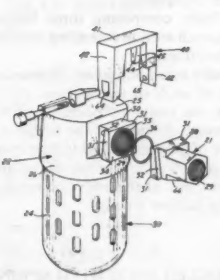
RELEASABLE CLAMP FOR MODULAR CONNECTOR

Franklin Ribble, Arvada, and William E. Huber, Englewood, both of Colo., assignors to Wilkerson Corporation, Englewood, Colo.

Filed Feb. 17, 1981, Ser. No. 234,702

Int. Cl.³ F16L *15/00*

U.S. Cl. 285—91 **1 Claim**



1. A clamping structure for releasably securing together two pressure fluid conveying components in sealed relationship, each component having means thereon defining a sealing surface including a pressure fluid port therein and adapted for juxtaposed sealing engagement with a corresponding sealing surface on the other component, transversely extending flanges adjacent each of said sealing surfaces and defining on each component coplanar cam surfaces sloping away from the adjacent sealing surface, means defining a wedge surface on at least of one of said components below and generally transverse to said sloping cam surfaces, a yoke having spaced parallel

depending legs, means on said legs defining opposed sloping cam surfaces engageable with said flanges when said component sealing surfaces are positioned together for clamping said components together in sealed pressure fluid conducting engagement, said yoke legs having aligned apertures extending therethrough, one of said apertures being threaded, a bolt positioned in said apertures and extending between said yoke legs and having a threaded end threadably engaged with said threaded aperture and having a headed end defining a head exterior of the other leg and abutment means intermediate said threaded end and said headed end, and a wedge rotatably carried by said bolt intermediate the ends thereof and adapted for sliding engagement with the aperture in the other leg, said wedge having a wedge surface adapted to engage said wedge surface of said component and an abutment surface to engage said abutment means when said components are juxtaposed and said bolt is threaded into said threaded aperture thereby to pull said yoke tightly over said components to releasably clamp and retain said components tightly together in fluid pressure tight relation.

4,352,512

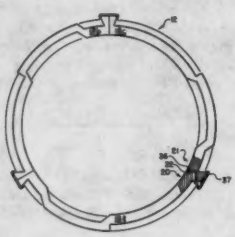
MOLDED FITTINGS

Kermit W. Janssen, Valley Forge, Pa., and Andrew Mitchell, Pompano Beach, Fla., assignors to Certain-teed Corporation, Valley Forge, Pa.

Division of Ser. No. 31,522, Apr. 19, 1979, Pat. No. 4,310,372. This application Sep. 2, 1981, Ser. No. 298,455

Int. Cl.³ F16L *21/00*

U.S. Cl. 285—419 **15 Claims**



1. A screen comprising:

a hollow body composing three longitudinally extending sections, each section extending substantially 120° in transverse directions;

longitudinally extending joints disposed along adjoining side surfaces of each of the sections for joining the sections together, the joints including interfitting means arranged along mating portions of the surfaces;

at least one of the sections including apertures for providing fluid access into the interior of the hollow body; and

means at one end of the body for mounting the body on an adjoining hollow member.

4,352,513

TOGGLE LATCH WITH SPRING CATCH

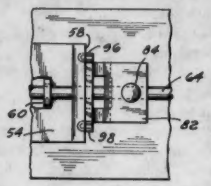
Conrad J. Gunther, Uniondale, N.Y., assignor to Dzus Fastener Co., Inc., West Islip, N.Y.

Filed Mar. 13, 1980, Ser. No. 130,021

Int. Cl.³ E05C *5/02*

U.S. Cl. 292—113 **6 Claims**

1. In a toggle latch for fastening two members together including a base adapted to be coupled to one member to be fastened, a draw bar connected to the base and having a free end to engage with the other member to be fastened, a lever having an opening therein connected to the draw bar and the base and pivotable to shift the draw bar between open and closed positions to unfasten and fasten the two members respectively the lever being pivotally mounted to the base and the draw bar so that when it is pivoted to the closed position it is shifted into overlying position with respect to the draw bar and the base and when it is pivoted to the open position it is pivoted up and away from the draw bar and the base, the improvement comprising; a one piece integral spring catch having an anchor portion affixed to the lever, a resilient intermediate portion extending from the anchor portion and terminating in an arcuate arm projecting through the opening in the lever, the resilient intermediate portion biasing the actuator arm in one direction and permitting the arm to be moved in a second direction, at least one finger on the spring catch in position to automatically engage with one of the base and draw bar when the lever is pivoted to the closed position and the



actuator arm is biased in the one direction to prevent pivoting of the latch to the open position and to be disengaged therefrom when the actuator arm is moved in the second direction permitting the lever to pivot to the open position, the intermediate portion being U-shaped and terminating in two ends with the anchor portion extending from one end and the actuator arm extending from the other end, the actuator arm including a finger gripping portion extending through the opening in the lever to facilitate grasping and movement thereof, and the intermediate portion having a central slot between two spaced U-shaped legs to facilitate provision of sufficient resilience for the spring catch and accommodating a portion of the toggle latch when the lever is shifted to the closed position.

4,352,514

SHOCK ABSORBING DEVICE

Hajime Orima, Sakaimachi, Japan, assignor to Firster Corporation Limited, Japan

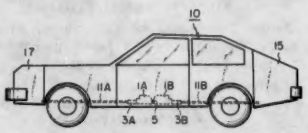
PCT No. PCT/JP78/00061, § 371 Date Aug. 21, 1979, § 102(e) Date Aug. 20, 1979, PCT Pub. No. WO79/00417, PCT Pub. Date Jul. 12, 1979

PCT Filed Dec. 20, 1978, Ser. No. 154,395

Claims priority, application Japan, Dec. 21, 1977, 52-152949

Int. Cl.³ B60R *19/06*

U.S. Cl. 293—110 **2 Claims**



1. A shock absorbing device comprising:

a pair of slightly separated, substantially rigid fluid containers;

a passage of restricted size connecting said containers to each other;

a piston slidably mounted in fluid-tight fashion in each container, one end of each piston projecting outward from its respective container;

each container containing a compressible gas and a liquid; and

a frangible closure valve positioned in said passage separat-

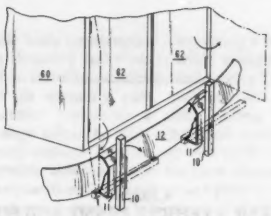
ing the gas and liquid contained in one container from the gas and liquid contained in the other container, said closure valve being rupturable when the fluids in either container reach a predetermined pressure, whereby when a force above said predetermined pressure is applied to the projecting end of one of said pistons, the pressure of the fluid in the corresponding container ruptures the closure valve, allowing the fluid to pass between said containers and causing the other piston to extend outwardly of its container, thereby absorbing the shock of the force applied to said one piston.

4,352,515

PIN-ACTUATED ROTATABLE RAM BAR APPARATUS AND CARRIER ADAPTER

John B. Schumacher, P.O. Box 657, Huron, S. Dak. 57350

Filed Jul. 7, 1980, Ser. No. 166,183
Int. Cl.³ B60R *19/02*
U.S. Cl. 293—145 **16 Claims**



1. A rotatable ram bar apparatus having at least one ram bar assembly for mounting on a vehicle bumper, said assembly comprising:

a ram bar rotatable between first and second positions;

means for securing said bar to said bumper including a bracket attachable to the outer side of said vehicle bumper; and

pin-actuated means for retaining said bar in one of said first position wherein said bar extends vertically with respect to said vehicle bumper and said second position wherein said bar is substantially parallel to said bumper,

said bracket including a shaft protruding horizontally therefrom, said ram bar being rotatably mounted on said shaft, and said retaining means including a pin slidably mounted within said ram bar, one end of said pin interacting with said shaft for holding said ram bar in said first position.

4,352,516

SPREADER BAR

John S. Gasper, Fort Wayne, Ind., assignor to North American Van Lines, Inc., Fort Wayne, Ind.

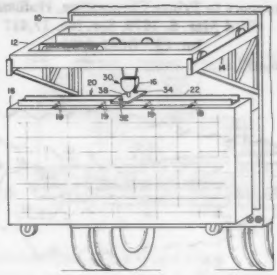
Filed Jun. 10, 1980, Ser. No. 158,247
Int. Cl.³ B66C *1/10*
U.S. Cl. 294—81 R **1 Claim**

1. A spreader bar arrangement for enabling an elongated product, comprising an elongated telephone switchgear frame having an upper frame, to be lifted and transported by a transport vehicle having a movable crane mechanism thereon, comprising:

a. a channel shaped support member extending along the top of the elongated telephone switchgear frame, said channel shaped support member having a plurality of fastening apertures therein spaced along its length in coincidence with similar fastening apertures in the upper frame of the elongated telephone switchgear frame;

b. fastener means fastening said channel shaped support member to the elongated telephone switchgear frame at said plurality of fastening apertures; and

c. a connector means centrally disposed along the length of said channel shaped support member for coupling said support member, and the elongated telephone switchgear frame support thereby, to the crane mechanism on the transport vehicle, whereby the channel shaped support member enables the elongated telephone switchgear frame to be lifted upon and transported by the transport vehicle with a minimum amount of damage to the switchgear frame, said connector means including two U-bolts extending around said channel shaped support member with the closed end of each U-bolt mounted around the bottom of said support member, and a bracket, having



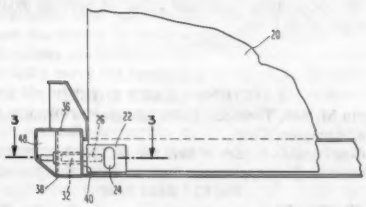
four holes therein for receipt of the legs of the two U-bolts, being fastened to the legs of the two U-bolts above said support member, whereby the two U-bolts may be loosened relative to the bracket to enable the connector means to be centered relative to the weight of the elongated product to provide a balanced load for the crane mechanism, and said bracket having a centrally mounted attachment means including a centrally located pin extending therethrough for attachment to the crane mechanism of a transport vehicle.

4,352,517

FRONT LOCKING PIN FOR GOOSENECK CONTAINER CHASSIS

William A. Bertolini, 115-65 Undercliff Ter., Kinnelon, N.J. 07405

Filed Nov. 10, 1980, Ser. No. 205,590
Int. Cl.³ B62D *23/00*
U.S. Cl. 296—35.3 **7 Claims**



1. In a chassis having a front transverse bolster including a rear wall, top and bottom walls, an open front and apertures in the rear wall; a locking pin mechanism adjacent each bolster aperture comprising a pin mounted for movement transversely of and in the bolster, a rack of gear teeth longitudinally along the pin at the front portion thereof, a spur gear quadrant having teeth engaging the rack teeth, a handle extending generally horizontally from the spur gear quadrant and means mounting the spur gear quadrant for rotation transversely of and in the bolster to selectively activate the pin and extend it into its locking position through the bolster aperture and into a lower

corner member of a container on the chassis and to retract the pin out of the corner member in the unlocked position, and a releasable latch to selectively latch the spur gear quadrant against rotation and to unlatch the spur gear quadrant to permit its rotation by the handle, said spur gear quadrant, handle and mounting means being within the confines of the bolster in both the extended and retracted position of said locking pin.

4,352,518

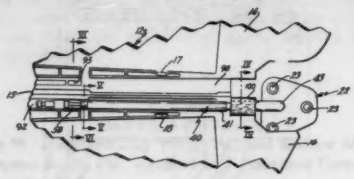
VISOR

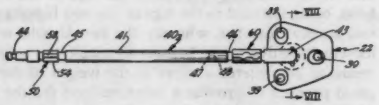
Edgar D. Prince, and Konrad H. Marcus, both of Holland, Mich., assignors to Prince Corporation, Holland, Mich.

Filed Mar. 5, 1979, Ser. No. 17,417

Int. Cl.³ B60J *3/02*

U.S. Cl. 296—97 H **31 Claims**





1. A visor comprising:

a visor body including recess means for receiving a visor support rod, said recess means including a locking tab extending toward a visor rod;

a visor support rod including a pair of collars made of a lubricous polymeric material molded and shrunk in spaced relationship on said rod to form a continuous cylindrical and uniformly compressive contact area between each of said collars and said rod for permitting rotation between said collars and said rod to provide a predetermined torque between said collars and said rod, said collars including flange means cooperating with said recess means of said visor body to anchor said collars within said visor body against rotation within said visor body and said tab cooperating with said collar to prevent axial movement of said rod.

4,352,519

LATCHING GLARE SHIELD

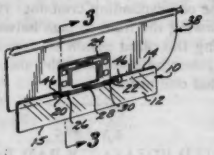
Ernesto M. Aro, Torrance, Calif., assignor to Orion Industries, Inc., Compton, Calif.

Continuation-in-part of Ser. No. 60,726, Jul. 25, 1979, abandoned. This application Sep. 11, 1980, Ser. No. 186,245

Int. Cl.³ B60J *3/02*

U.S. Cl. 296—97 G **7 Claims**

1. A glare shield of an automotive vehicle sun visor comprising a flat sheet of molded transparent glare reducing plastic having a hinging edge defining an elongated, shallow channel at its center and an opposite parallel edge, a metal hinge pin having ends molded into said sheet at said hinging edge to span the width of said channel, a plastic backing having unitary knuckle means rotatably secured to said hinge pin in said channel and having a snap fastening catch formed thereon opposite said knuckle means for releasable engagement with said opposite parallel edge of said glare reducing plastic sheet to hold said sheet and said backing in face to face disposition, said backing being constructed with a plurality of sockets extending away from said knuckle, and metal spring biased gripping means inserted into said backing and disposed thereon opposite said glare reducing plastic sheet for removably securing said backing to said automotive vehicle sun visor, said gripping



means including a plurality of clips, each of which fits into a separate one of said sockets and has retaining means for interacting with the structure of said backing at said sockets to retard the withdrawal of said clips from said sockets.

4,352,520

COMPOSITE OF A VEHICLE FRAME AND BODY PARTS

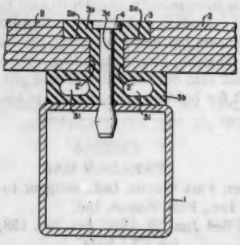
Manfred Stiglmaier, Gilching, and Rudolf Hörmann, Dachau, both of Fed. Rep. of Germany, assignors to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 966,021, Dec. 4, 1978, abandoned. This application May 9, 1980, Ser. No. 148,285

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1977, 2753957

Int. Cl.³ B62D *25/20*

U.S. Cl. 296—182 **14 Claims**

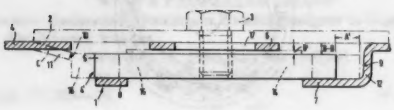


1. A vehicle construction which includes at least two vehicle body parts, and means for mounting the vehicle body parts at a vehicle frame, characterized in that the at least two vehicle body parts are floor panels, the mounting means includes a vibration damping insert of a viscous material adapted to be hardened in situ, the floor panels are only attached to the insert and the insert is only attached to the vehicle frame the vibration damping insert has a natural frequency which is lower than a natural frequency of the vehicle frame, the vibration damping insert has a substantially T-shaped cross-sectional configuration and is disposed between adjacent edges of the floor panels, a T-crossbar of the vibration damping insert is adapted to rest flush on the vehicle frame, and in that the material of the vibration damping insert consists essentially of a mixture of an adhesive material and an elastic filler.

4,352,521
MOUNTING ELEMENT WITH THREADED MEMBER ATTACHED TO A BODY WALL OF AN AUTOMOTIVE VEHICLE

Werner Trenkler, Asperg, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed May 21, 1979, Ser. No. 40,739
Claims priority, application Fed. Rep. of Germany, May 20, 1978, 2822057
Int. Cl.³ B60R 13/00; B62D 27/02
U.S. Cl. 296—191 7 Claims

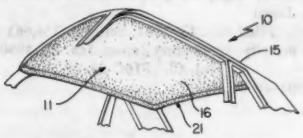


1. A vehicle body construction comprising a mounting element with a threaded fastening member attached to a body panel wall of an automotive vehicle and serving for the accommodation of an assembly part, characterized in that the threaded member comprises a plate having major faces bounded by edge sides, and with a threaded aperture, and said body panel wall includes limiting sections, between which said plate is insertable sideways with its faces disposed opposite thereto, as well as stops for retaining said plate at its edge sides in a receiving space located between said limiting sections, wherein at least one of said stops is formed by a portion of said body panel wall cut free in a manner creating a bendable tongue.

4,352,522
AUTOMOBILE HEADLINER AND METHOD OF MAKING SAME

Donald E. Miller, Livonia, Mich., assignor to Allen Industries, Inc., Troy, Mich.

Filed Sep. 29, 1980, Ser. No. 191,609
Int. Cl.³ B60J 7/00
U.S. Cl. 296—214 19 Claims

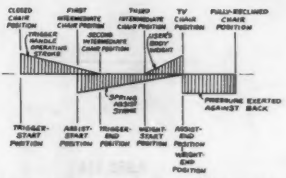


1. In an automobile headliner comprising, a substrate defined by a compacted and rigidified fibrous material, said substrate having a peripheral portion which is more highly compacted than the remainder thereof, a decorative sheet, and means bonding said substrate and decorative sheet together as a single-piece laminate having a substantially solid cross section throughout, the improvement wherein said peripheral portion has an annular enlargement and said decorative sheet covers said enlargement and defines a sheet-covered enlargement which serves as an integral garnish molding for said headliner, said peripheral portion has an inside surface which is adapted to be disposed adjacent the roof of an automobile, said enlargement when viewed in cross section has a peripheral strip which is substantially parallel to said inside surface and a convex part inwardly of said peripheral strip, said convex part upon being disposed adjacent said roof being convex generally away from said roof and toward the interior of said automobile, said peripheral strip and convex part having said decorative sheet bonded thereagainst and comprising said sheet-covered enlargement, and said enlargement when viewed in cross section has a peripheral edge which has an effective thickness which is greater than the thickness of said peripheral portion.

4,352,523
MANUALLY-OPERATED SPRING-ASSISTED RECLINING CHAIRS

Raymond E. Holobaugh, Jr., Tupelo, Miss., assignor to Mohasco Corp., Amsterdam, N.Y.

Filed Jul. 2, 1980, Ser. No. 164,500
Int. Cl.³ A47C 1/02
U.S. Cl. 297—85 25 Claims



1. In a reclining chair of the type having
(A) a stationary base for supporting the chair on a floor;
(B) body-supporting means including a seat located generally above the base, and a backrest located rearwardly of the seat;
(C) an armrest located at a side of the seat; and
(D) a recliner system at the armrest, and kinematically interconnecting the body-supporting means to the base for reciprocal movement of the body-supporting means relative to the base in forward and rearward directions along a multi-position path which extends between
an end-limiting upright chair position in which the body-supporting means is oriented at a predetermined orientation relative to the base, and
an end-limiting fully-reclined chair position in which the body-supporting means is oriented at a different reclined orientation relative to the base;
the improvement which comprises:
(a) manually-actuatable means for moving the body-supporting means downstream along the path only in the forward direction from the upright chair position towards an intermediate chair position which is intermediate the end-limiting chair positions,
(b) assist means operatively connected to the manually-actuatable means, for forwardly moving the body-supporting means further downstream along the path past the intermediate chair position after the manually-actuatable means has moved the body-supporting means to the general vicinity of the intermediate chair position, to thereby forwardly move the body-supporting means downstream along the path to a greater extent than that obtained by sole operation of the manually-actuatable means,
(c) said manually-actuatable means including an actuator member mounted on the armrest within hand-reach of a seated user, for displacement along a working stroke from a trigger-start position which corresponds to the upright chair position, to a trigger-end position which corresponds to the intermediate chair position,
(d) said manually-actuatable means being in force-transmitting relationship with, and affirmatively forwardly driving, the recliner system throughout the displacement of the actuator member as it is being displaced from its trigger-start position towards its trigger-end position, to thereby forwardly move the body-supporting means downstream of the path towards the intermediate chair position,
(e) said manually-actuatable means being in impositive engagement, and out of force-transmitting relationship with, the recliner system when the actuator member reaches the

trigger-end position, to thereby disengage the manually-actuatable means from the recliner system and permit the latter and the body-supporting means to be moved forwardly further downstream along the path towards the fully-reclined position in response to the operation of the assist means and to the body weight of the seated user acting on the recliner system, and

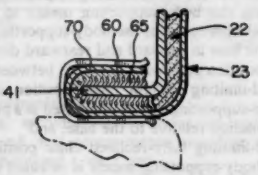
(f) said actuator member being returnable from its trigger-end position to its trigger-start position upon disengagement of the manually-actuatable means from the recliner system when the actuator member reaches its trigger-end position.

4,352,524

IMPROVEMENT IN UPHOLSTERED FURNITURE

Lawton H. Crosby, Lake Bluss, Ill., assignor to Morley Furniture Spring Corporation, Lake Bluff, Ill.

Filed Jan. 2, 1980, Ser. No. 108,994
Int. Cl.³ A47C *31/02*
U.S. Cl. 297—452 **1 Claim**



1. In upholstered furniture having a metal frame over which upholstery material is stretched, the improvement in an upholstery material and metal frame rail fastening assembly, comprising:

(a) a metal frame rail including a strip member having upper and lower surfaces and a free edge,

(b) a first flexible fastening element secured to said strip member and including a sheet having a plurality of tiny loops extending outwardly of said sheet to form a pile;

(c) said first flexible fastening element being folded over said free edge of said strip member and secured to both said upper and lower surfaces thereof;

(d) upholstery material having a second flexible fastening element secured thereto on one side of the material and adjacent one edge of the material;

(e) said second flexible fastening element including a sheet secured to said material and a plurality of tiny fingers with enlarged tips thereon extending outwardly of said second flexible element sheet;

(f) said upholstery material adjacent said one edge being folded over said first flexible fastening element and the fingers of second flexible element being pressed into the loops of said first flexible element whereby the cooperating elements serve to fasten the material to the rail and the stress exerted which tends to separate the elements is substantially only shear stress; and

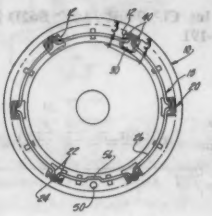
(g) U-shaped spring clip means which force said second flexible element against said first flexible element and said first flexible element against both said upper and lower surfaces.

4,352,525

WHEEL COVER WITH TORQUE RESISTOR

Edwin E. Foster, and Thomas E. Foster, both of Austin, Tex., assignors to Michael Ladney, Jr., Grosse Pointe Shores, Mich.

Filed May 7, 1981, Ser. No. 261,463
Int. Cl.³ B60B *7/06*
U.S. Cl. 301—37 PB **10 Claims**



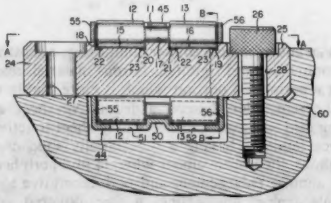
1. In a cover for a vehicle wheel of the type having a body and a resilient wire ring member mounted on the inboard face of the cover body, said ring member having at least one pair of parted ends and a plurality of radially outward projections thereon extending through radial passageways on the cover which are adapted to releasably engage an annular surface on the wheel rim to retain the cover on the wheel, that improvement which comprises, at least one of said projections being formed as a metal member separate from the ring member and extending radially outwardly through one of said passageways, said parted ends of the ring being bent radially outwardly to form a pair of radially outwardly extending legs, the laterally opposite sides of said metal member having laterally inwardly extending recesses therein, said legs being nested within said recesses, said metal member having a radially outwardly projecting biting edge at its radially outer end adapted, when the cover is mounted on the wheel, to dig into said annular surface of the wheel rim to resist rotation of the cover relative to the wheel.

4,352,526

SLIDE ROLLER BEARING

Katsuhito Imai, Nagoya, Japan, assignor to Hiroshi Teramachi, Tokyo, Japan

Filed Jan. 13, 1981, Ser. No. 224,661
Claims priority, application Japan, Jan. 23, 1980, 55-6359
Int. Cl.³ F16C *29/06*
U.S. Cl. 308—6 C **3 Claims**



1. In a slide roller bearing, comprising:

a race body defining an endless track around the circumference thereof;

a plural number of rollers placed side-by-side along said track of said race body for circulation therearound;

spacers inserted between individual rollers to prevent contact of adjacent rollers; and

a casing consisting of upper and lower covers clampingly fixed to each other to guide said rollers from a load-carry-

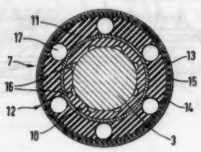
ing region to a non-load-carrying region of said track or vice versa, said upper cover being provided with openings on opposite sides of a center retainer band, and, inwardly embossed guide portions substantially of U-shape in section in the center portions contiguous to said non-load carrying side of said track, and, said lower cover being provided with an inwardly embossed guide portion substantially of U-shape in the center portion facing said non-load-carrying side of said track.

4,352,527

WATER-LUBRICATED BEARING CONSTRUCTION FOR SHIP'S PROPELLER SHAFT

Anders Sandström, Nynäshamn, Sweden, assignor to Scatra AB, Nynäshamn, Sweden

Filed Jul. 15, 1980, Ser. No. 169,167
Int. Cl.³ F16C *17/14, 27/02, 27/06*
U.S. Cl. 308—26 **8 Claims**



1. In a propeller system for ships including a propeller shaft connected to be driven by a ship's drive shaft to drive a ship's propeller connected thereto, with water-lubricated bearing means located in the stern frame of said ship having said propeller shaft extending therethrough, the improvement wherein said water-lubricated bearing means comprise a first layer of hard rubber extending coaxially about said propeller shaft, a second layer of soft rubber arranged coaxially with said first layer and a tubular member externally enclosing said water-lubricated bearing means, said tubular member being formed with an inner casing, an outer casing and with an intermediate layer located therebetween, said inner casing and said outer casing each consisting of a material having a high specific weight with said intermediate layer being formed of a material having a low specific weight.

6. In a propeller system for ships including a propeller shaft connected to be driven by a ship's drive shaft to drive a ship's propeller connected thereto, with water-lubricated bearing means located in the stern frame of said ship having said propeller shaft extending therethrough, the improvement wherein said water-lubricated bearing means comprise a first layer of hard rubber extending coaxially about said propeller shaft, a second layer of soft rubber arranged coaxially with said first layer and a tubular member externally enclosing said water-lubricated bearing means, said tubular member being formed with a pair of metallic tubes having an intermediate layer of soft rubber located therebetween.

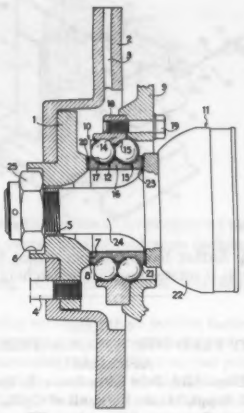
7. In a propeller system for ships including a propeller shaft connected to be driven by a ship's drive shaft to drive a ship's propeller connected thereto, with water-lubricated bearing means located in the stern frame of said ship having said propeller shaft extending therethrough, the improvement wherein said water-lubricated bearing means comprise a first layer of hard rubber extending coaxially about said propeller shaft, a second layer of soft rubber arranged coaxially with said first layer and a tubular member externally enclosing said water-lubricated bearing means, said second layer of soft rubber having formed therein axially extending blind-ended bores distributed over the circumference thereof and extending over approximately two-thirds of the length of said bearing means.

4,352,528

ROLLING BEARING HAVING TWO ROWS OF ROLLING ELEMENTS AND DEVICE FOR MOUNTING A VEHICLE WHEEL

Pierre L. Guimbretiere, Neauphle le Chateau, France, assignor to Glaenzer Spicer, Poissy, France

Filed Feb. 29, 1980, Ser. No. 126,114
Claims priority, application France, Apr. 24, 1979, 79 10351
Int. Cl.³ F16C *19/08, 33/58*
U.S. Cl. 308—189 R **3 Claims**



1. A device for mounting on a support a vehicle wheel which has a hub, said device comprising a rolling bearing comprising two rows of rolling elements and an inner unit defining raceways for the rolling elements and defining at least one end face provided with frontal radiating splines, said unit consisting of a single ring which is axially clamped between two faces, of which one face is associated with the support and the other face pertains to the wheel hub, splines being provided on the face of the hub which fit and engage said splines on the single ring.

4,352,529

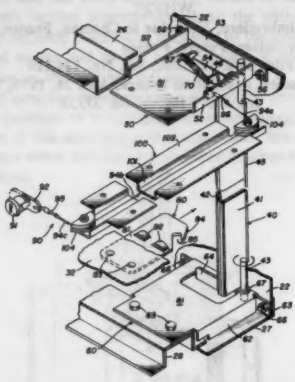
DRAWER LOCKING SYSTEM

Mark H. Steinke, Montgomery, Ill., assignor to Lyon Metal Products, Incorporated, Aurora, Ill.

Filed Nov. 3, 1980, Ser. No. 203,123
Int. Cl.³ E05B *65/46;* **E05C** *7/06*
U.S. Cl. 312—222 **24 Claims**

1. A drawer locking system for use with a frame having a front, a rear, a pair of sides and upper and lower ends, and at least two drawers carried by the frame and movable between a forwardly open position and a rearwardly closed position, said drawer locking system comprising an elongated latching bar having a longitudinal axis substantially perpendicular to the ends of the frame and extending adjacent to the drawers, said latching bar being rotatable about said longitudinal axis between latching and unlatching positions, means for biasing said latching bar to the latching position thereof, and a latching clip on each of said drawers and having camming means for engaging said latching bar and causing rotation thereof to the unlatching position thereof as the associated drawer is moved toward the closed position thereof, whereupon the associated drawer can be moved further toward the closed position until

said camming means passes said latching bar, whereupon said latching bar tends toward the latching position thereof, said



latching clip further having keeper means for receiving said latching bar as it rotates toward the latching position thereof.

4,352,530

ROTARY FEED FOR TONOGRAPHIC SCANNING APPARATUS

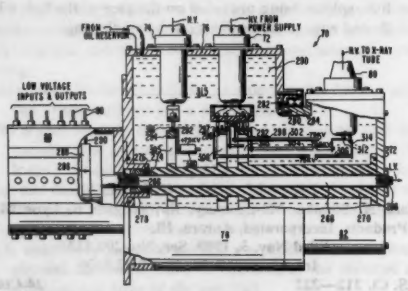
Kendall L. Dinwiddie, Palo Alto; Janos A. Racz, San Jose, and Edward J. Seppi, Menlo Park, all of Calif., assignors to General Electric Company, Milwaukee, Wis.

Continuation of Ser. No. 863,979, Dec. 23, 1977, Pat. No. 4,201,430, which is a continuation of Ser. No. 677,939, Apr. 19, 1976, abandoned. This application Mar. 21, 1980, Ser. No. 132,682

The portion of the term of this patent subsequent to May 6, 1997, has been disclaimed.

Int. Cl.³ A61B *39/00*; H01R *6/00*

U.S. Cl. 339—5 M **4 Claims**



1. Rotary electrical feed-through apparatus comprising first and second casing portions, said first and second casing portions being rotatably connected together to form a chamber adapted to contain insulating fluid, a first high voltage electrical contact positioned in said chamber and supported from said first casing portion, a second high voltage electrical contact positioned in said chamber in engagement with said first high voltage electrical contact and supported from said second casing portion, first and second high voltage electrical leads respectively connected to said first and second high voltage electrical contacts and respectively passing through said first and second casing portions to the exteriors thereof, a plurality of first low voltage electrical contacts attached to said first casing portion and positioned outside said chamber, and a plurality of second low voltage electrical contacts positioned outside said chamber in engagement with said first low voltage contacts and attached to said second casing portion.

4,352,531

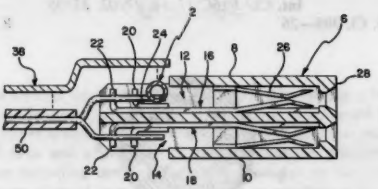
COMMONING ELEMENT FOR AN ELECTRICAL CONNECTOR

David H. Gutter, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jun. 2, 1980, Ser. No. 155,905

Int. Cl.³ H01R *9/07, 23/06*

U.S. Cl. 339—14 R **7 Claims**



1. In an electrical connector of the type comprising a housing block having a row of cavities within one surface thereof, contact members seated in respective ones of said row of cavities, and commoning means for electrically connecting each said contact member, the improvement comprising:

each of said contact members comprising support portion means positioned within a respective cavity of said row of cavities, said cavities being open to said one surface;

said commoning means comprising elongate radially compressible spring means positioned transversely above said support portion means of said contact members; and

means provided by said housing block being movable towards said one surface for covering said row of cavities along said one surface, radially compressing said spring means through said one surface into intimate engagement against said support means of said contact members and to maintain said spring means in electrical contact with said contact members whereby electrical contact is established between said contact members.

4,352,532

MANIFOLDING MEANS FOR ELECTRICAL AND/OR PNEUMATIC CONTROL UNITS AND PARTS AND METHODS THEREFOR

George T. Hardin, Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

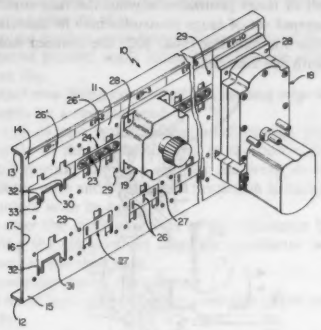
Filed Sep. 15, 1980, Ser. No. 187,497

Int. Cl.³ H01R *04/64*

U.S. Cl. 339—15 **46 Claims**

1. In a manifold means adapted to detachably carry on one side thereof a plurality of pneumatically and electrically operated control units each of which is adapted to be fluidly and electrically interconnected to pneumatic means and electrical means of said manifold means by plug-in means of said units respectively cooperating with plug-in means of said pneumatic means and said electrical means of said manifold means at said one side thereof, the improvement wherein said manifold

means has external interconnection means for said pneumatic means and said electrical means on the other side thereof



whereby external pneumatic and electrical lines can all be interconnected to said other side of said manifold means.

4,352,533

CONNECTOR DEVICE FOR PRINTED BOARDS

Teruo Murase, Tokorozawa; Kyoichiro Kawano, and Akiyoshi Oshitani, both of Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

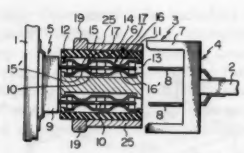
PCT No. PCT/JP79/00273, § 371 Date Jun. 30, 1980, § 102(e) Date Jun. 18, 1980, PCT Pub. No. WO80/01022, PCT Pub. Date May 15, 1980

PCT Filed Oct. 29, 1979, Ser. No. 199,932

Claims priority, application Japan, Oct. 31, 1978, 53-134352

Int. Cl.³ H05K *1/00*

U.S. Cl. 339—17 L **18 Claims**



1. A connector device for a plurality of printed boards which are to be electrically interconnected and which are to be spaced from one another, comprising at least one pair of opposed male connectors provided on said printed boards to be interconnected, each male connector being provided with at least one projecting terminal; at least one projecting terminal of one of said opposed male connectors being spaced from and in alignment with said corresponding projecting terminal of the other of said opposed male connectors; and at least one female connector positioned between said opposed male connectors and movably attached to and supported by said at least one projecting terminal of one of said opposed male connectors, the electrical connection between said corresponding projecting terminals of said opposed male connectors being established and broken by the displacement of said at least one interpositioned female connector.

4,352,534

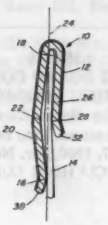
BUS BAR

Lennart B. Johnson, Milford, N.H., assignor to Teradyne, Inc., Boston, Mass.

Filed Jun. 5, 1980, Ser. No. 156,808

Int. Cl.³ H01R *31/08*

U.S. Cl. 339—19 **8 Claims**



1. In an easily attachable bus bar to interconnect a number of connector posts, the center lines of said posts defining a post locus, the improvement comprising:

a first portion having, in vertical section, first and second contact points,

said first portion having an intermediate portion between said first and second points spaced in a first direction transversely to vertical lines connecting said first and second points, and

a second portion integrally connected to said first portion and spaced from said first portion in a second direction opposite to said first direction,

said second portion having, in vertical section, third contact points adjacent to said intermediate portion and spaced in said second direction from said vertical lines by a distance less than the thickness of said posts,

said first, second, and third contact points defining a post-insertion region between them,

said bar being constructed to bend said posts when said bar is attached to them to provide the normal force for electrical contact, the locus defined by said vertical lines corresponding generally to said post locus.

4,352,535

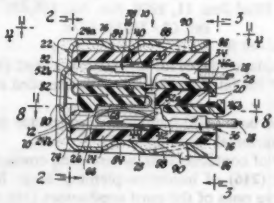
ELECTRICAL CONNECTOR

James W. McNamee, Sr., and Daniel N. Kosareo, both of Warren, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 27, 1980, Ser. No. 163,817

Int. Cl.³ H01R *13/639*

U.S. Cl. 339—75 MP **5 Claims**



1. An electrical connector for connecting a DIP having an insulated block with first and second sets of substantially parallel circuitry tabs projecting from opposite respective sides thereof to a wiring harness comprising:

a DIP having first and second sets of tabs folded over onto the top and bottom surfaces of an insulated block respectively,

a socket having a longitudinal slot at one end receiving the DIP,

two rows of terminals in the socket disposed on opposite sides of the slot,

each of said terminals being attached to a lead of a wiring harness and having a flexible contact engaging one of the tabs of the DIP, and

a cover mounted over the one end of the socket to retain the DIP in the slot.

4,352,536

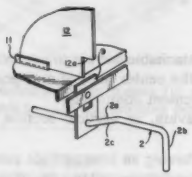
PRINTED CIRCUIT BOARD CONNECTING AND LOCKING ASSEMBLY

Gerald J. Goldberg, Palm Beach Gardens, Fla., assignor to Harris Data Communications, Inc., Dallas, Tex.

Filed Mar. 7, 1980, Ser. No. 128,142

Int. Cl.³ H01R *13/64*

U.S. Cl. 339—75 MP **18 Claims**



1. A printed circuit board connecting and locking assembly comprising:

(a) at least one electrical connector for receiving a printed circuit board in electrical engagement therewith;

(b) a support structure;

(c) at least one circuit board locking key supported at least in part by said support structure for movement between a first, open position located outside of an insertion and removal path of said printed circuit board into and out of said electrical connector and a second, closed position located within said path of the printed circuit board into and out of the electrical connector; and

(d) at least one actuator rod mounted in association with said electrical connector for reciprocation, said actuator rod extending in an axial direction from said electrical connector beyond said locking key and being provided with an axially extending camming surface for displacing said locking key from said first, open position to said second, closed position.

4,352,537

CORD ADAPTER

Ronald H. Guelden, Shreveport, La., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 11, 1980, Ser. No. 158,401

Int. Cl.³ H01R *4/24*

U.S. Cl. 339—99 R **5 Claims**

1. A cord adapter (**100**) for terminating a cord (**10**) including a plurality of insulated conductors (**16**), the cord adapter comprising:

a dielectric base (**112**) including a connector portion (**116**) having terminal members (**162**);

a plurality of contacts (**184**), where each contact comprises:

a first set (**216**) of insulation-piercing tangs for engaging respective ones of the cord conductors (**16**); and

a second set (**218**) of insulation-piercing tangs;

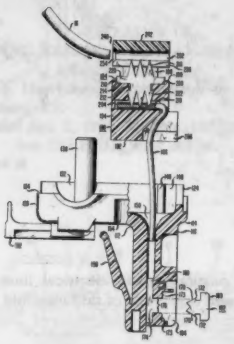
a contact holding body (**182**), made from dielectric material, and comprising:

a first surface (**190**);

a plurality of spaced-apart, parallel conductor-receiving bores (**204**) contained in a plane substantially parallel to the first surface; and

a plurality of spaced-apart, parallel contact-receiving slots (**208**), where each slot (**208**) is in communication with the first surface and one of the bores, each slot being configured to accommodate a contact such that the first set of tangs protrudes beyond the first surface and the second set of tangs protrudes into its associated bore;

means for aligning (**148, 202**) the contact holding body with the base; and



a plurality of second insulated conductors (**186**), each second conductor having a first end threaded into an associated bore and in intimate electrical connection with the second set of tangs of the associated contact, and having a second end contained in the connector portion (**116**) of the base and in intimate electrical connection with a terminal member (**162**), whereby the connections at both ends of the second conductors (**186**) help to secure the body to the base.

4,352,538

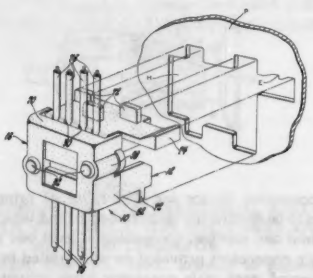
LOW PROFILE CONNECTOR FOR PRINTED CIRCUIT BOARD

Charles E. Fowler, Boardman, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed May 19, 1980, Ser. No. 151,308

Int. Cl.³ H01R *11/20*; H02B *1/04*

U.S. Cl. 339—126 R **2 Claims**



1. A low profile connector for a printed circuit board comprising:

a connector body having two spaced rows of terminal cavities which extend from a conductor end to a contact end thereof,

a transverse slot in the contact end for receiving a printed circuit board,

said transverse slot being between the two rows of terminal cavities and communicating with each of the terminal cavities,

a support rib in each terminal cavity which is parallel to the depth of the slot and which projects from a side wall transverse to the slot,

a terminal disposed in each cavity having a contact bow projecting into the slot,

said terminal further including a channel-shaped body having spaced parallel walls located on opposite sides of the support rib,

said contact bow being connected to a leading edge of one of said walls by a reverse bend,

at least one of said walls having a tail portion projecting outwardly of the conductor end of the connector body, said tail portion having a slot for receiving an insulated conductor wire and piercing its insulation to make electrical contact with its core,

a cover over the conductor end of the connector body for covering the tail portions after the conductor wires are received in the slots, and

panel mounting means comprising:

a first set of lugs projecting from one side of the connector body,

a second set of lugs projecting from an opposite side of the connector body, and

a latch finger projecting from a third side of the connector body,

said first and second sets each having at least one lug spaced from the remaining lugs so that the lugs in each set are adapted to engage opposite sides of a panel, and

said latch finger being wide enough to span the space between the lugs in each set.

4,352,539

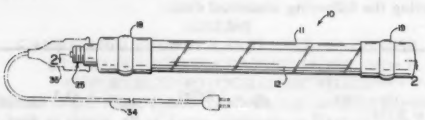
FLUORESCENT LIGHT WITH THREADED CONNECTOR

Gary W. Vest, 4480 Broadview Rd., Cleveland, Ohio 44109

Filed May 30, 1980, Ser. No. 154,790

Int. Cl.³ F21V *23/02*

U.S. Cl. 339—154 L **1 Claim**



1. In a portable fluorescent light including an elongated, transparent, tubular housing, an axially elongated, cylindrical fluorescent lamp positioned in said housing coaxial therewith, and electrical circuit means, including two fluorescent lamp sockets, for energizing said lamp, each one of said lamp sockets being mounted on said tubular housing adjacent an associated end thereof, the improvement wherein the lamp further comprises:

electrical ballast means associated with said electrical circuit means and including a protective cover therefor, said cover being connected to and in axial alignment with said housing;

electrical lamp starter means associated with said electrical circuit means; and

connector means at the end of the light associated with said ballast means and in axial alignment with said cover, said connector means including at its end distal from said housing a threaded annular electrical contact adapted for electrical connection to a conventional threaded electrical socket of a trouble light power cord for energizing said fluorescent lamp, said connector means including a generally cylindrical dielectric body with a recess formed therein to receive said starter means, said cylindrical dielectric body and starter means therein being adapted to be received within the incandescent bulb receptacle of the trouble light power cord while the ballast is disposed axially between the start and the fluorescent lamp and is thereby adapted to be supported out of but adjacent the receptacle of the power cord when the electrical contact is fully engaged with the electrical socket of the trouble light power cord.

4,352,540

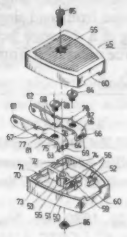
ELECTRICAL PLUG

Liang-Huang Liu, 97, Lane 192, Hsui-Yuan Rd., Feng-Yuan City, Taiwan

Filed Jul. 23, 1980, Ser. No. 171,311

Int. Cl.³ H01R *33/04*

U.S. Cl. 339—196 R **6 Claims**



1. An improved electrical plug comprising elongated members for conveying electrical energy and a housing having first and second housing elements, at least one of said housing elements including means for fixing said elongated members in predetermined positions in said housing, and an opening in said housing permitting said elongated members to communicate between the exterior and interior of said housing, said fixing means including a wall disposed in said at least one housing element, said wall being disposed generally perpendicular to a major axis of said elongated members, and a pair of stop blocks disposed in parallel, spaced relationship to said wall in said at least one of said housing elements, the spacing between said wall and said stop blocks being sized to receive a portion of said elongated members, said wall and said stop blocks each having at least one protuberance for engaging said elongated members.

4,352,541

OPTICAL SCANNING DEVICE WITH CONSTANT SPEED SCAN

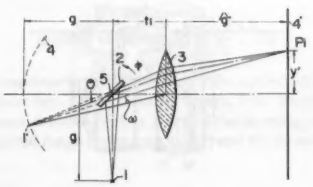
Kazuo Minoura, and Setsuo Minami, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 20, 1978, Ser. No. 971,439

Claims priority, application Japan, Dec. 23, 1977, 52/156158

Int. Cl.³ G02B *27/17, 3/02*

U.S. Cl. 350—6.6 **21 Claims**



1. An optical scanning device comprising:

a light source for producing light rays;

means for deflecting light rays from the light source toward a predetermined direction;

a surface to be scanned by said deflected light rays;

single lens means having a distortion coefficient V disposed between the deflecting means and the surface for focusing the light rays deflected by the deflecting means; and

said deflecting means having a revolution angle ϕ_0 sin kt within a definite time, where ϕ_0 is an amplitude, k is a constant, and t is time, wherein the following equation is satisfied to make the moving velocity of a light beam on said surface constant;

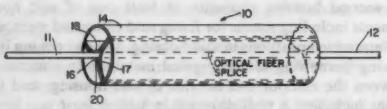
$$\phi_0 = \frac{1}{2\sqrt{2 - 3\left(\frac{g}{g + t_1}\right)^2 V}}$$

where t_1 is the distance between said single lens means and said deflecting means measured from said single lens means toward said deflecting means; g is a distance between said deflecting means and the light source measured from the deflecting means toward the light source.

4,352,542
CABLE CONNECTOR

John E. Tydings, Rockville, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 26, 1980, Ser. No. 181,524
Int. Cl.³ G02B 5/14
U.S. Cl. 350—96.21 **13 Claims**



1. A connector for joining opposing cable ends, comprising:

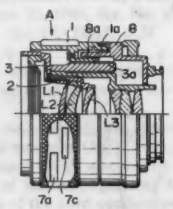
support means; and

shape memory means supported by the support means so as to align and hold the cable ends, said shape memory means comprising strips of a shape memory alloy.

4,352,543
LENS BARREL

Motoyoshi Furusawa, Shyobu, and Shigemitsu Mori, Omiya, both of Japan, assignors to Fuji Photo Optical Co., Ltd., Japan

Filed Jul. 17, 1980, Ser. No. 169,781
Claims priority, application Japan, Jul. 21, 1979, 54/93100
Int. Cl.³ G02B 7/02
U.S. Cl. 350—252 **4 Claims**

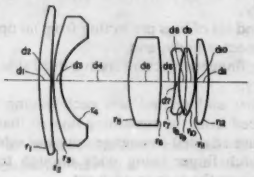


1. A lens barrel for a lens system in an optical instrument comprising a driven member, and an operating ring made of synthetic resin having a driving portion operatively engaged with said driven member for driving the driven member and an operating portion imparted with a driving force for driving said driven member, said driving portion and said operating portion being located in different positions in the direction of the optical axis of the lens system in the lens barrel characterized in that said operating ring is provided on said operating portion or on the periphery of the operating ring between said operating portion and said driving portion with a plurality of slots extending in a plane perpendicular to the optical axis of the lens system.

4,352,544
WIDE-ANGLE PHOTOGRAPHIC CAMERA LENS SYSTEM

Toshihiro Imai, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 30, 1980, Ser. No. 173,751
Claims priority, application Japan, Aug. 1, 1979, 54/98785
Int. Cl.³ G02B 9/62, 13/04
U.S. Cl. 350—464 **1 Claim**



1. A wide-angle photographic camera lens system comprising a front diverging lens group consisting of a first positive meniscus lens component and a second negative meniscus lens component, and a rear converging lens group consisting of a third positive lens component, a fourth negative lens component, a fifth positive meniscus lens component and a sixth positive lens component, said photographic camera lens system having the following numerical data:

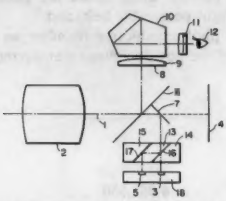
f = 1		
r_1 = 2.669		
d_1 = 0.094	n_1 = 1.72000	ν_1 = 43.7
r_2 = 9.738		
d_2 = 0.003		
r_3 = 1.281		
d_3 = 0.063	n_2 = 1.62041	ν_2 = 60.27
r_4 = 0.387		
d_4 = 0.538		
r_5 = 0.875		
d_5 = 0.300	n_3 = 1.80440	ν_3 = 39.62
r_6 = −1.243		
d_6 = 0.091		
r_7 = −0.853		
d_7 = 0.042	n_4 = 1.78472	ν_4 = 25.71
r_8 = 0.996		
d_8 = 0.052		
r_9 = −1.558		
d_9 = 0.074	n_5 = 1.62041	ν_5 = 60.27
r_{10} = −0.588		
d_{10} = 0.003		
r_{11} = 10.557		
d_{11} = 0.091	n_6 = 1.61272	ν_6 = 58.75
r_{12} = −0.994		

wherein the reference symbol f represents focal length of the entire lens system as a whole, the reference symbols r_1 through r_{12} designate radii of curvature on the surfaces of the respective lens components, the reference symbols d_1 through d_{11} denote thicknesses of the respective lens components and airspaces reserved therebetween, the reference symbols n_1 through n_6 represent refractive indices of the respective lens components and the reference symbols ν_1 through ν_6 designate Abbe's numbers of the respective lens components.

4,352,545
CAMERA FOCUS DETECTING DEVICE

Naoyuki Uno, Urawa; Masao Jyojiki, Tsurugashima, and Harumi Aoki, Kiyose, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 1, 1980, Ser. No. 117,589
Claims priority, application Japan, Feb. 13, 1979, 54-15255; Feb. 16, 1979, 54-16948
Int. Cl.³ G03B 3/10, 7/08
U.S. Cl. 354—25 10 Claims

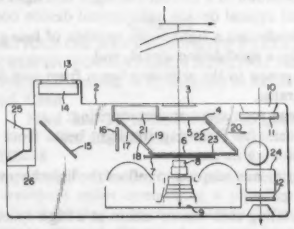


1. A focus detecting device for a camera comprising: a flat package assembly having an optical planar plate including a beam splitter for passing a first part of light from a photographing lens and reflecting the remaining part thereof and a reflecting surface for directing said reflected light in parallel with said first part of light; and a substrate below said optical planar plate having a pair of light receiving elements provided in a plane in parallel to said optical planar plate in such a manner that the optical distance of one of said light receiving elements from said photographing lens is different from the optical distance of the other light receiving element from said photographing lens, said light receiving elements receiving images formed by said first and remaining parts of light wherein focalization states are determined from the difference in focalization of images which are formed on said pair of light receiving elements by said photographing lens.

4,352,546
CAMERA SELECTIVELY SETTABLE TO EITHER STANDARD PHOTOGRAPHIC MODE OR SUPERTELEPHOTOGRAPHIC MODE

Hiroshi Iwata, Nara; Tetsuo Yamaoka, and Akitoshi Morioka, both of Osaka, all of Japan, assignors to West Electric Co., Ltd., Osaka, Japan

Filed Mar. 11, 1981, Ser. No. 242,576
Claims priority, application Japan, Mar. 14, 1980, 55-32995
Int. Cl.³ G03B 3/00, 13/06, 15/05
U.S. Cl. 354—126 4 Claims



1. A camera which can be selectively switched between a standard photographic mode and a supertelephotographic mode which comprises:

(a) a camera body having a first light aperture formed through a wall of the camera body and through which the light rays from a subject enter into said camera body;

(b) an optical system for standard photography for focusing the light rays which have entered through said first light aperture on a film surface through a shutter mechanism and a standard lens;

(c) a standard viewfinder system for permitting an operator to view an image of said subject which is substantially similar to the image focused on said film surface through said optical system for standard photography, the standard viewfinder system including a second light aperture formed through said wall of said camera body, a first finder lens, a first eyepiece and an eyepiece window;

(d) a third light aperture formed through said wall of said camera body;

(e) an optical system for supertelephotography for focusing the light rays, which have entered said third light aperture, through said shutter mechanism on said film surface, said optical system for supertelephotography comprising at least one supertelephoto lens, a first reflecting mirror, a second reflecting mirror and said shutter mechanism arranged in the order named;

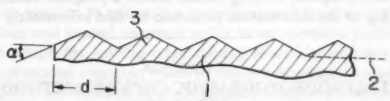
(f) a supertelephotographic viewfinder system for permitting the operator to view an image substantially similar to that focused over said film surface through said optical system for supertelephotography which comprises said first light aperture of said camera body, a second finder lens, a third reflecting mirror, a fourth reflecting mirror, a second eyepiece and the eyepiece window; and

(g) a control means for selecting either said optical system for standard photography or said optical system for supertelephotography so that an image of a subject is focused over said film surface through the selected optical system.

4,352,547
FOCUSING SCREEN OF A CAMERA

Toshihiro Sasaya, Kawasaki, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Jul. 14, 1981, Ser. No. 285,132
Int. Cl.³ G03B 13/20
U.S. Cl. 354—200 9 Claims



1. In a focusing screen capable of passing light therethrough and disposed between an objective lens and an eyepiece to enable the focused condition of the objective lens with respect to an object to be observed through the eyepiece and having a surface formed with a number of pyramidical faces, the improvement residing in that the angle of inclination α of each of said pyramids satisfies an inequality that

$$\frac{0.8f}{10{,}000(n-1)\Delta} \leqq \alpha \leqq \frac{1.5}{2(n-1)F}$$

where F represents the F-number of the optical system from the objective lens to the focusing screen, f the focal length of the eyepiece, n the refractive index of the focusing screen and Δ the required range finding accuracy, and the focusing screen satisfies

$$A < \frac{3}{10{,}000}$$

where A represents the visual angle whereat a length cos α times as great as the length of the slant face extending from the bottom surface to the vertex of said pyramid at the angle of inclination α is seen through said eyepiece.

4,352,548

CAMERA HAVING A VARIABLE PROGRAM EXPOSURE CONTROL DEVICE

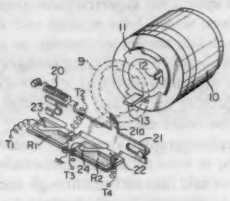
Kenji Toyoda, Kawasaki, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Continuation of Ser. No. 41,414, May 22, 1979, abandoned. This application Apr. 23, 1981, Ser. No. 256,951

Claims priority, application Japan, May 31, 1978, 53-64373

Int. Cl.³ G03B *17/12, 7/08*

U.S. Cl. 354—286 **9 Claims**



1. In a camera of the interchangeable lens type having a program exposure control device which is so programmed that a combination of shutter speed and aperture value may be determined according to the brightness of the object to be photographed and film speed and a lens mount; and an interchangeable lens mounted detachably on said body through said mount, the improvement comprising:

(a) program varying means provided in said program exposure control device, the program of said program exposure control device being capable of being arbitrarily selected by the setting of said program varying means;

(b) information means provided on said interchangeable lens, the information possessed by said information means corresponding to the main usage of photography of the lens; and

(c) interlock means for setting said program varying means so that when said interchangeable lens is mounted on said body, said program varying means selects a program corresponding to the information possessed by said information means.

4,352,549

ELECTROPHOTOGRAPHIC COPYING METHOD AND APPARATUS

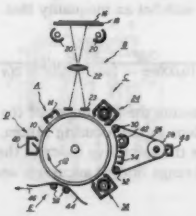
Takashi Ozawa, Ebina, Japan, assignor to Rank Xerox Limited, London, England

Filed Jul. 1, 1980, Ser. No. 164,996

Claims priority, application Japan, Jul. 27, 1979, 54-094915

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 R **12 Claims**



1. In an electrophotographic printing machine of the type in which a powder image of an original document is formed on a photoconductive member, a latent image forming device comprising:

a receiving member positioned closely adjacent the photoconductive member;

means for transferring the powder image from the photoconductive member to said receiving member; and

means for recording on the photoconductive member an electrostatic latent image of the powder image transferred to said receiving member.

8. In electrophotographic printing, a method of forming an electrostatic latent image comprising the steps of:

forming a powder image of an original document on a photoconductive member;

transferring the powder image from the photoconductive member to a light permeable belt; and

recoring on the photoconductive member an electrostatic latent image of the powder image transferred to the belt.

4,352,550

COMBINATION OF CIRCULAR/STRAIGHT LINE LIGHT BEAM SCAN TRANSFORMING APPARATUS AND OPTICAL DEVICE AND METHOD OF FABRICATING CIRCULAR/STRAIGHT LINE TRANSFORMING DEVICE

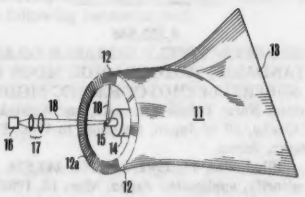
Kozo Uchida, Akikawa, Japan, assignor to Iwatsu Electric Co., Ltd., Tokyo, Japan

Filed Dec. 5, 1980, Ser. No. 213,301

Claims priority, application Japan, Dec. 13, 1979, 54-160831; Dec. 13, 1979, 54-160832; Dec. 13, 1979, 54-160833; Dec. 13, 1979, 54-160834; Dec. 13, 1979, 54-160835; Dec. 13, 1979, 54-160836; Dec. 13, 1979, 54-160837; Dec. 13, 1979, 54-160838; Dec. 13, 1979, 54-160839; Dec. 13, 1979, 54-160840; Dec. 13, 1979, 54-160841; Dec. 13, 1979, 54-160842

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 R **60 Claims**



1. A combination of a circular/straight line light beam scan apparatus and optical device, said optical device comprising:

means for producing a light beam capable of being varied in intensity by a modulation signal; and

an object exposed to the scanning beam from said light beam scan apparatus,

said light beam scan apparatus comprising:

focussing means for focussing the light beam from said light beam producing means;

rotary mirror means adapted to reflect the light beam from said focussing means;

means for rotating said mirror means at a high speed, and

circular/straight line transforming optical fiber means which includes:

a cylindrical portion having a fore end part thereof bent toward the center thereof so that the extension of said bent part intersects the axis of rotation of said rotary mirror means, the reflected light beam being focussed on the fore end part; and

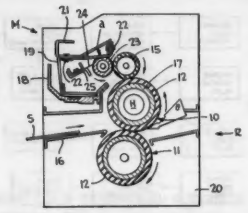
a linear portion adapted to receive said light beam from said cylindrical portion and emit said light beam as a linear scanning beam in a sequence in conformity to the sequence of reception of light beam by said cylindrical portion.

4,352,551

ELECTROPHOTOGRAPHIC FIXING DEVICE

Soichi Iwao, Okazaki, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jun. 3, 1981, Ser. No. 269,858
Claims priority, application Japan, Jun. 6, 1980, 55-76781
Int. Cl.³ G03G 15/00; B05C 11/00
U.S. Cl. 355—3 FU 4 Claims



1. In an electrophotographic fixing device comprising:

a heat roller and a press roller journalled parallel to one another in a frame, said heat roller being covered by a layer of silicone rubber;

oil applying means on said frame for coating the surface of said heat roller with an offset preventing agent to prevent offset of a toner image formed in a sheet fed through said rollers;

said oil applying means comprising a felt element impregnated with the offset preventing agent, a metallic roller having its surface in rubbing contact with said felt element, and being rotatably driven by said heat roller, and a metallic doctor blade having a forward end thereof in pressing contact with said metallic roller;

the improvement wherein said metallic roller has a roughened surface;

said blade being of a material having a lower hardness than that of said metallic roller, whereby said forward end of said blade is abraded by said roughened surface at the initial stage of rotation of said metallic roller and thereby comes into intimate contact with said surface for forming a uniform coating of said agent over the entirety of said surface without irregularities;

and

said forward end of said blade lying to the rear of the position of rubbing contact between said felt element and said metallic roller relative to the direction of rotation of said metallic roller.

4,352,552

MULTICOLOR DEVELOPMENT SYSTEM FOR ELECTROPHOTOGRAPHIC PRINTING MACHINES

Klaus K. Stange, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

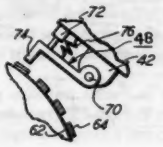
Filed Jun. 25, 1980, Ser. No. 162,988
Int. Cl.³ G03G 15/01, 15/08
U.S. Cl. 355—4 5 Claims

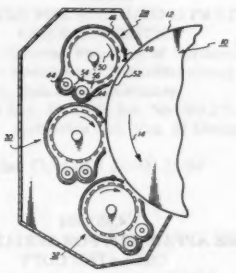
1. An apparatus for developing a latent image, including:

a first transport roller comprising a plurality of magnetic strips for attracting at least one of two differently colored developer materials thereto, and means for movably supporting said magnetic strips with adjacent magnetic strips being parallel to and spaced from one another to define a cylindrical configuration and to enable developer material to pass therebetween, said supporting means moving said magnetic strips to transport the attracted developer material closely adjacent to the latent image;

a second transport roller spaced from said first transport roller, said second transport roller comprising a plurality of magnetic strips for attracting the other of the developer materials thereto, and means for movably supporting said magnetic strips with adjacent magnetic strips being parallel to and spaced from one another to define a cylindrical configuration and to enable developer material to pass therebetween, said supporting means moving said magnetic strips to transport the other of the developer materials closely adjacent to the latent image;

a first blade member arranged to move from an inoperative position in which the leading edge thereof is remote from said first transport roller to an operative position in which the leading edge thereof is closely adjacent to said first





transport roller to remove developer material therefrom; and

a second blade member arranged to move from an inoperative position in which the leading edge thereof is remote from said second transport roller to an operative position in which the leading edge thereof is closely adjacent to said second transport roller to remove developer material therefrom, said second blade member being in the inoperative position in response to said first blade member being operative.

4,352,553

QUALITY CONTROL COPYING APPARATUS

Shuzo Hirahara, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Dec. 15, 1980, Ser. No. 216,767
Claims priority, application Japan, Dec. 24, 1979, 54-166816
Int. Cl.³ G03G 15/00
U.S. Cl. 355—14 E 18 Claims

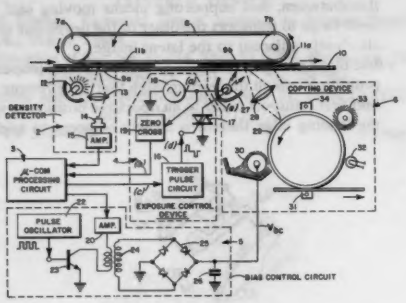
1. An automatic quality control copying apparatus comprising:

frequency detecting means for detecting the frequency distribution of the density of a document, the frequency distribution meaning the frequency of occurrence of each density value of the document;

smoothing means for smoothing the frequency distribution when the frequency distribution has at least three maxima, said smoothing means executing a predetermined filter function till the frequency distribution has one or two maxima;

density detecting means responsive to said frequency detecting means and said smoothing means for detecting at least one density value according to a maximum or minimum

value of the frequency distribution when the frequency distribution has one or two maxima; and



control means for controlling the quality of a reproductive image according to the detected density value.

4,352,554

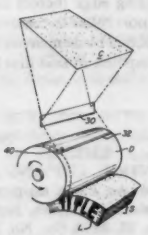
TITLE EDGE APPARATUS FOR SERIALLY PRODUCED COLLATED COPY

Stanton Kaye, 2216 Los Angeles St., Berkeley, Calif. 94707, and Curtis Schreier, San Francisco, Calif., assignors to Stanton Kaye, Calif.

Filed Apr. 24, 1981, Ser. No. 257,438

Int. Cl.³ G03B *27/52*

U.S. Cl. 355—40 **15 Claims**



1. The improvement in a machine to serially reproduce copy from original and place said copy in a collated array comprising in combination: means for retaining title information for imprintation to the edges of collated copy passing through said machine; means for serially scanning successive raster lines of said retained title information on a line raster basis synchronously onto edges of copy passing through said machine; means responsive to said scanning means for pigmenting the edge of said copy; means for indexing said scan to pigment successively said pages at the edge thereof, whereby when said pages are collated, the edges thereof display in location title information from the edges thereof.

2. The invention of claim 1 and including means registered to a side edge of the copier of said machine for serially pigmenting the side edge of passing copy, the legend.

4,352,555

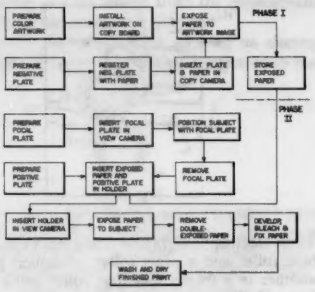
CONTROLLED DOUBLE EXPOSURE METHOD AND APPARATUS

Gregg Dobbs, and Laura P. Dobbs, both of Windermere, Fla., assignors to Fotozines, Inc., Windermere, Fla.

Filed Aug. 7, 1981, Ser. No. 291,041

Int. Cl.³ G03B *27/32, 17/24, 17/26, 15/00*

U.S. Cl. 355—77 **8 Claims**



1. A process for producing a controlled double exposure of a color print comprising the steps of:

(a) preparing color background artwork;

(b) preparing a negative plate of the background artwork;

(c) registering the negative plate with a sheet of positive-to-positive color paper in a copy camera;

(d) focusing the copy camera on the color background artwork;

(e) exposing the color paper to the background artwork through the negative plate forming a first exposure;

(f) removing and storing the first exposed color paper without development;

(g) preparing a positive plate complementary to the negative plate;

(h) registering the first exposed color paper with the positive plate in a view camera;

(i) exposing the first exposed color paper to a subject through the positive plate, forming a second exposure thereby generating a latent image of the subject in the previously unexposed portion of the first exposed color paper; and

(j) developing, bleaching, fixing and washing the first and second exposed paper to thereby produce a color photograph having the subject image disposed within the background artwork.

4,352,556

REFLECTOR FOR ELECTROOPTICAL DISTANCE MEASUREMENT

Erwin Haefliger, Buchs; Fritz Hinden, Aarau, and Aldo Lardelli, Schöftland, all of Switzerland, assignors to Kern & Co. AG, Aarau, Switzerland

Filed Mar. 19, 1980, Ser. No. 131,840

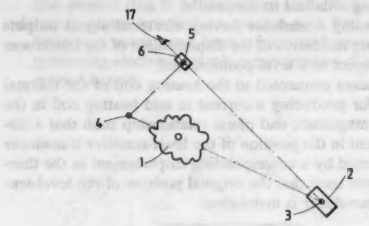
Claims priority, application Switzerland, Apr. 11, 1979, 3430/79

Int. Cl.³ G01C *3/10*; G02B *17/02*; G01C *1/00*

U.S. Cl. 356—1 **5 Claims**

1. A reflector for electrooptical measurement of the distance between a first and a second point in cooperation with a master station at the first point with: a right angle sighting device near to the reflector (6); means for arranging the right angle sighting device (13) with the reflector (6) at a distance from the second point (4) for concurrent observation of markers (20, 18) both at the first (3) and second points (4), the directions of the markers with respect to a reference point (19) at the reflector (6) forming a right angle only if the marker images (20, 18), as

observed, are coincident; a triple mirror (7) tiltable around a horizontal axis (11) for reflecting the measurement beam back to the first point (3) and a pentaprism (13) near to the triple mirror (7) for sighting the marker (18) at the second point (4) at a right angle when the marker (20) at the first point (3) near



the master station (2) is observed in a straight line along the side of the pentaprism (13); comprising further a case (8) with an opening (9,10) at each side around the horizontal axis and a holder (12) for the pentaprism that may be inserted into each one of the openings (9, 10) as required.

4,352,557
DETERMINING A TEST VALUE CORRESPONDING TO BLOOD SUBSIDENCE

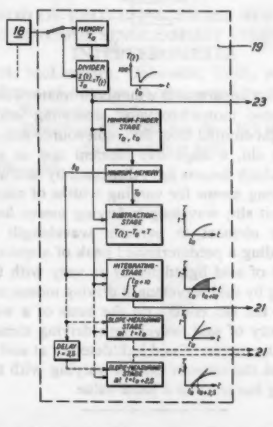
Holger Schmid-Schönbein; Holger Kiesewetter; Klaus Mussler, all of Aachen; Heinz Myrenne, Roetgen, and Andreas Scheffler, Wuppertal, all of Fed. Rep. of Germany, assignors to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

Filed Apr. 18, 1980, Ser. No. 141,638

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1979, 2942466; Mar. 11, 1980, 3009260

Int. Cl.³ G01N *33/48*

U.S. Cl. 356—39 12 Claims



1. In a method for obtaining measured test values from blood sedimentation corresponding to blood subsidence, by inserting a blood specimen in a transparent measuring chamber, removing erythrocyte aggregation present in the specimen, illuminating the specimen with light, and measuring the amount of light leaving the specimen over a given time, wherein:

(a) said specimen is inserted in a measuring chamber having upper (11) and lower (10) means movable relative to one another and the specimen comes in contact with said upper and lower means;

(b) erythrocyte aggregation present in said operation is counteracted by movement of said upper means relative to said lower means; and

(c) the amount of light leaving said specimen during the aggregation process setting in again is photometrically measured after sudden stopping or after transition to a continuous minor residual shearing movement of said upper and lower means, and photometric signals are generated; the improvement comprising:

(d) ascertaining a syllectogram from said generated photometric signals;

(e) defining as the onset of the aggregation phase an extreme value of the syllectogram within a predetermined time interval of about 5 seconds following said sudden stopping of shearing or transition to a residual continuous shearing; and

(f) ascertaining said test values at a predetermined time within approximately 2.5 seconds after onset of the blood aggregation from a slope of a test curve representing said syllectogram.

4,352,558
APPARATUS FOR MEASURING PARTICLE CHARACTERISTICS

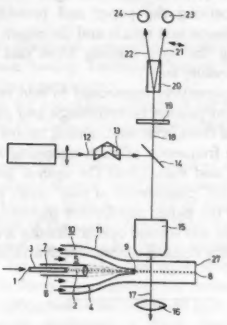
Wolfgang Eisert, Hanover, Fed. Rep. of Germany, assignor to Gesellschaft fur Strahlen-und Umweltforschung mbh, München, Neuherberg, Fed. Rep. of Germany

Filed Oct. 24, 1980, Ser. No. 200,378

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1979, 2943116

Int. Cl.³ G01N *33/48, 21/64*

U.S. Cl. 356—39 4 Claims



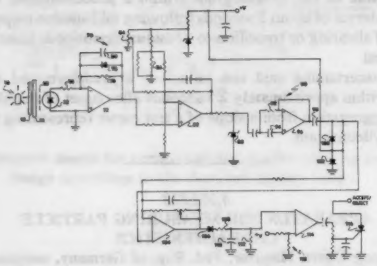
1. In apparatus for measuring reaction and/or diffusion of particles suspended in a fluid, which apparatus includes a supply tube for supplying a stream of the particle-containing fluid, a tapered tube surrounding the supply tube for providing a first entraining fluid stream and for encasing the particle-containing fluid in the first entraining fluid stream for the purpose of hydrodynamically focusing the particle-containing stream into a thin stream enclosed by the first fluid and in which the particles are separated from one another, means defining an outlet for passage of the thin stream and first fluid stream after leaving the tube, means producing a radiation beam which intersects the thin particle-containing stream, detector means disposed for detecting the radiation emanating from the separated particles, and a pulse evaluation circuit connected to the detector, the improvement comprising a further tube surrounding the supply tube and forming a further entraining fluid stream concentric with the particle-containing stream and the first entraining fluid stream, surrounding the particle-containing stream and flowing therewith through the tapered tube, said further entraining fluid stream having a composition selected to interact with the particles.

4,352,559

LOGARITHMIC PRIMARY TESTING SYSTEM FOR SECURITY VALIDATION

Robert L. Gorgone, Mentor; Alan J. Kovach, Cleveland, and Frank A. Novak, Seven Hills, all of Ohio, assignors to Ardac, Inc., Eastlake, Ohio

Continuation of Ser. No. 922,637, Jul. 7, 1978, abandoned, which is a continuation of Ser. No. 740,415, Nov. 10, 1976, abandoned.
This application May 23, 1980, Ser. No. 152,636
Int. Cl.³ G06K *9/82;* H01J *40/14;* G01N *9/24, 21/17*
U.S. Cl. 356—71 13 Claims



1. Apparatus for performing tests for determining the validity of a paper purported to be a valid instrument, comprising:

a light source;

a reticle in juxtaposition to and receiving light from said light source;

means interpositioned between said light source and said reticle for receiving the paper and providing relative movement between said reticle and the paper, such movement chopping the light passing from said source and through said reticle; and

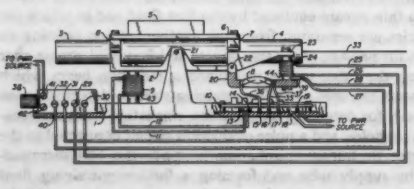
sensing means operatively connected to said reticle for receiving the light passing therethrough and generating an electrical signal therefrom, said sensing means testing such light as to the frequency of such chopping from an AC component of said signal, and the optical density of the paper, from a DC component of said signal, to determine the validity of the paper and further including means for establishing first and second optical density levels defining an optical density domain within which a valid instrument must lie.

4,352,560

SELF-LEVELING AND GRADE SETTING LASER APPARATUS

Jiri M. Nessel, deceased, late of Palo Alto, Calif., and by Alena Alexander, administrator, Menlo Park, Calif.

Filed Nov. 3, 1980, Ser. No. 203,436
Int. Cl.³ G01C *15/00*
U.S. Cl. 356—247 7 Claims



1. An apparatus for automatically maintaining the angular position of the light beam produced by a light source, comprising:

a base;

pivotal mounting means attached to the base, for mounting the light source;

a thermal motor having a heating coil and having two ends the linear displacement between which is responsive to the current applied to the heating coil, one end of said thermal motor being attached to the base and the other end being attached to the cradle;

a level-sensing transducer having electrical signal outputs which are indicative of the displacement of the transducer with respect to a level position, and;

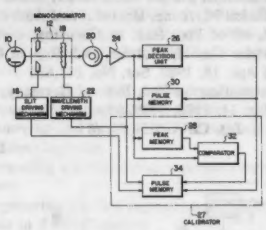
control means connected to the heating coil of the thermal motor for producing a current in said heating coil in the proper magnitude and phase relationship such that a displacement in the position of the level-sensitive transducer is corrected by a corresponding displacement in the thermal motor such that the original position of the level-sensitive transducer is maintained.

4,352,561

CALIBRATING APPARATUS IN A MONOCHROMATOR

Shigeo Tohyama; Nobuo Akitomo, and Isao Nemoto, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

PCT No. PCT/JP79/00158, § 371 Date Feb. 25, 1980, § 102(e) Date Feb. 25, 1980, PCT Pub. No. WO80/00189, PCT Pub. Date Feb. 7, 1980
PCT Filed Jun. 20, 1979, Ser. No. 192,530
Claims priority, application Japan, Jun. 23, 1978, 53-75350
Int. Cl.³ G01J *3/12, 3/18*
U.S. Cl. 356—332 12 Claims



1. A calibrating apparatus in a monochromator comprising a light source; said monochromator separating into spectral components light emitted from said light source and consisting of an entrance slit, a dispersive element and an exit slit; a lightdetector which detects light dispersed by said monochromator; slit driving means for varying widths of said entrance slit and said exit slit; wavelength driving means for rotating said dispersive element to perform wavelength scanning; means for deciding a predetermined peak of a spectrum from among outputs of said lightdetector as vary with the wavelength scanning by said wavelength driving means; and means for calibrating the slit widths on the basis of a wavelength scanning quantity of said wavelength driving means until a ratio between the output of said lightdetector at said predetermined peak and the outputs thereof varying with the wavelength scanning has become a fixed value.

4,352,562

PASSIVE RING LASER RATE OF TURN DEVICE WITH ACOUSTO-OPTIC MODULATION

Henry T. Minden, Concord, Mass., assignor to Sperry Corporation, New York, N.Y.

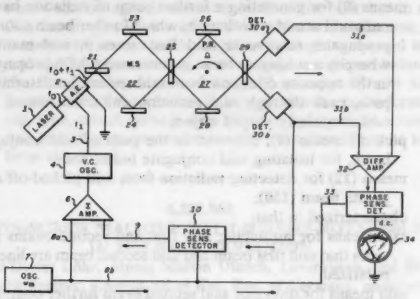
Filed Jul. 7, 1980, Ser. No. 166,732
Int. Cl.³ G01C *19/64*
U.S. Cl. 356—350 7 Claims

1. In a rate of turn measuring device of the type including a monochromatic beam, a beam splitting system, and a passive ring to which first and second beams are coupled from the

beam splitting system to traverse the path therein in opposite directions, the improvement comprising:

first modulator means responsive to said monochromatic beam for coupling a frequency modulated beam about a first center frequency to said beam splitting system, thereby causing said first and second beams traversing said passive ring to be frequency modulated;

detector means coupled to receive said first and second frequency modulated beams from said passive ring for producing electrical signals representative of said first and second beams;



signal generator means coupled to said first modulator means for providing a modulating signal that is frequency modulated about a second center frequency;

frequency shift means responsive to said signal representative of said first beam and coupled to said signal generator means for controlling said modulating signal; and

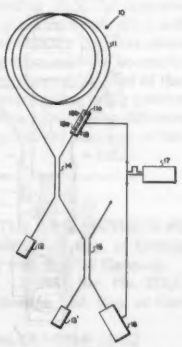
means coupled to receive said signals representative of said first and second beams for producing a signal representative of instantaneous differences therebetween.

4,352,563

METHOD OF PROVIDING PHASE BIASING IN A CONTINUOUS SINGLE-MODE FIBER RING INTERFEROMETER

Matthew N. McLandrich, Oceanside, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 22, 1980, Ser. No. 189,497
Int. Cl.³ G01B 9/02
U.S. Cl. 356—350 **2 Claims**



1. In a unitized fiber interferometer gyro having a continuous integral looped single-mode fiber coupled to bidirectionally transmit beams of light from a laser to at least one detector, an improvement therefor is provided comprising:

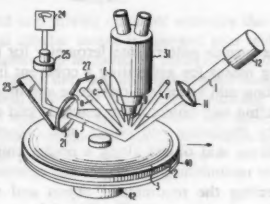
a piezoelectric cylinder having a coaxial bore sized to contiguously and securely accommodate a portion of the continuous integral single-mode fiber in a bonded secure fashion and being fashioned from a material that exerts a compressive radially inwardly force on the portion of the continuous integral single-mode fiber in response to driving electric fields for changing the refractive index of a portion of the continuous integral single-mode fiber to impart a $\pi/2$ relative phase shift between the bidirectionally traveling light beams.

4,352,564

MISSING ORDER DEFECT DETECTION APPARATUS

William R. Roach, Rocky Hill, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 30, 1980, Ser. No. 155,989
Int. Cl.³ G01N 21/32
U.S. Cl. 356—354 **8 Claims**



1. A flaw detection apparatus for detecting defects in a record surface having uniformly spaced track convolutions said apparatus comprising:

first means for providing a beam of light directed toward a region of the surface of said record along an incident beam path;

second means for focusing said beam of light to illuminate a region of said surface, said illuminated region being sufficiently large to span a plurality of tracks;

the structure of the track convolutions in the surface region illuminated by said light beam serving as a diffraction grating for diffracting the light from said illuminated region to form a zero diffraction order beam of light and higher diffraction order beams of light, and wherein short wavelength variations in track depth exist along the length of said track convolutions, the structure of said track convolutions and said short wavelength variations serving as a two-dimensional diffraction grating for diffracting the light from the illuminated region into said zero diffraction order beam of light, said higher diffraction order beams of light, and into additional higher diffraction order beams of light which are substantially affected by said short wavelength variations;

third means for establishing relative motion between said surface and said beam path in such a manner that a succession of regions of said surface are scanned by said light beam;

fourth means for directing one of said higher diffraction order beams, to the exclusion of said additional higher diffraction order beams, to a first location;

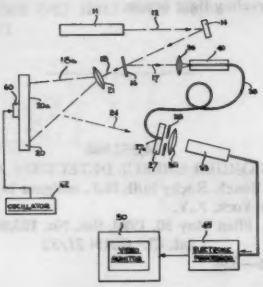
light detection means having a photosensitive surface positioned to intercept said one higher diffraction order beam at said first location and to provide a detection signal in response to said one higher order diffraction beam; and

fifth means, responsive to said detection signal developed by said light detection means, for indicating illumination of a defect in said surface.

4,352,565
SPECKLE PATTERN INTERFEROMETER

James M. Rowe, 4705 Avenue C., Torrance, Calif. 90505, and Rudolph W. Modster, 1916 Leighton Ave., Los Angeles, Calif. 90062

Filed Jan. 12, 1981, Ser. No. 224,184
Int. Cl.³ G01B 9/02
U.S. Cl. 356—360 5 Claims



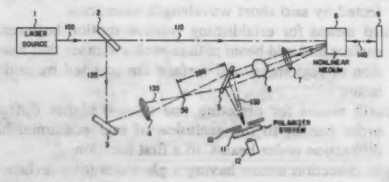
1. In a speckle pattern interferometer for testing an object, including means for generating a coherent light beam, means for splitting said beam into reference and object beams, means for directing said object beam towards said object, means for cyclically displacing said object, said object beam being reflected from said object along a predetermined optical axis, means for recombining the object and reference beams, means for detecting the recombined object and reference beams, means for processing the combined beams, and means for displaying the combined beams, the improvement being means for channeling the reference beam from the beam splitting means to the recombining means along an optical path equal in length to that of said object beam between the beam splitting means and the recombining means comprising

an optical fiber having one end thereof positioned to receive the reference beam from said beam splitting means, said fiber running to a point whereat the other end thereof is directly opposite said detecting means, said fiber directing the object beam towards said detecting means along said predetermined axis.

4,352,566
DETECTION OF BIREFRINGENCE IN IRREGULARLY SHAPED OBJECTS

Gary C. Bjorklund, Los Altos; David M. Bloom, Menlo Park, both of Calif., and Paul F. Liao, Fair Haven, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 19, 1980, Ser. No. 160,850
Int. Cl.³ G01N 21/40
U.S. Cl. 356—364 21 Claims



1. Apparatus for analyzing radiation that has passed through an irregularly shaped object (6), said object being transparent to radiation of at least one wavelength, said apparatus comprising:

means (1 and 2) for producing a first beam (110) and a second beam (120) having radiation which includes radiation at said one wavelength;

means (3) for directing said second beam (120) along a first predetermined path into said irregularly shaped object;

radiation collection means (7), disposed to collect radiation from said second beam which has been scattered by and through said irregularly shaped object, for directing said scattered light along a second predetermined path;

a material (8) having a third-order nonlinearity in susceptibility, disposed in said second predetermined path and in the path of said first beam;

means (9) for generating a further beam of radiation having radiation at said wavelength, which further beam counterpropagates relative to said first beam in said material, whereby a conjugate beam is generated which propagates in the opposite direction from said second predetermined path, back through said radiation collection means and said irregularly shaped object;

pick-off means (5), disposed in the path of said conjugate beam, for isolating said conjugate beam; and

means (12) for detecting radiation from said picked-off conjugate beam (150);

characterized in that:

said means for producing said first and second beams provides that said first beam and said second beam are linearly polarized;

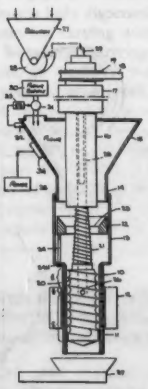
said means for directing said second beam further comprises means (4) for bringing said second beam to a first focus point (50), said first focus point being a first distance from said pick-off means; and

said means for detecting said picked-off conjugate beam further comprises means (10 and 11), disposed to intercept radiation at a second focus point to which said picked-off conjugate beam propagates, said second focus point being at a distance from said pick-off means which is substantially equal to said first distance, for detecting the presence of a polarization which is different from said linear polarization, whereby the presence of birefringence in said irregularly shaped object is detected.

4,352,567
AUTOMATIC DOUGH-PROCESSING APPARATUS

Raul Guibert, 10374 Summer Holly Cir., Los Angeles, Calif. 90024

Filed Jun. 10, 1981, Ser. No. 272,344
Int. Cl.³ B29B 1/06
U.S. Cl. 366—76 11 Claims



1. An apparatus for mixing flour or any other powder with a liquid solution to produce a homogeneous dough, said apparatus comprising:

(A) a vertically-mounted assembly constituted by a tubular

processing chamber whose upper end communicates with a metering tube to which said powder is supplied;

(B) a rotating shaft coaxially mounted in said assembly, said shaft having a main screw section of uniform diameter operating within the chamber, and a conical valve section operating within the tube;

(C) a ring slidable within the metering tube and surrounding the valve section to define an annular valve orifice, the ring being axially shiftable by an adjustable element to set the size of the orifice, whereby the flour admitted into the chamber through the metering tube is hurled by the main screw section against the inner wall of the chamber in a film-forming zone to create a thin powder film thereon;

(D) means to introduce the solution through a channel in said shaft communicating with a lateral nozzle just below the film-forming zone to cause the powder film to be bombarded by the solution to form a paste in a paste-forming zone, which paste is then kneaded by the main screw in a kneading zone just below the paste-forming zone to form the dough.

4,352,568

TWIN-SCREW MACHINE WITH SCREWS ROTATABLE IN THE SAME DIRECTION

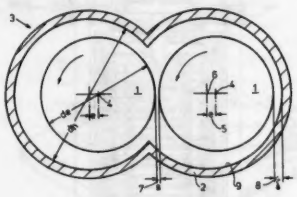
Karl-Dieter Löhr, Alpen; Martin Ullrich, Leverkusen, and Erhard Tresper, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 27, 1981, Ser. No. 248,118

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1980, 3014643

Int. Cl.³ A21C *1/06*

U.S. Cl. 366—84 **3 Claims**



1. In a twin-screw machine of the type wherein the screws are rotatable in the same direction for melting, mixing, dispersing, shearing and imparting energy, in a housing having a figure-eight cross-section and containing circular eccentrically arranged rotatable kneading discs, the improvement wherein: the clearance δ between the eccentric discs and the inner wall of the housing is greater than the constant clearance s between two adjacent kneading discs and the eccentricity (e) at each side of the housing from the central point of the housing to the central point of the kneading disc being greater than zero and less than half the absolute value of the difference between the diameter of the housing and the diameter of the disc minus the clearance s.

4,352,569

MIXING APPARATUS AND METHOD FOR MIXING

Werner Krauss, Hamburg, Fed. Rep. of Germany, assignor to Claudius Peters AG, Fed. Rep. of Germany

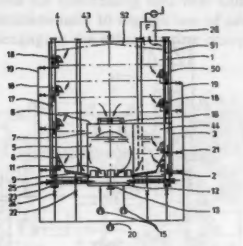
Filed Jun. 11, 1981, Ser. No. 272,572

Claims priority, application Fed. Rep. of Germany, Jun. 14, 1980, 3022346

Int. Cl.³ B01F *13/02*

U.S. Cl. 366—107 **10 Claims**

1. A mixing apparatus for mixing particulate bulk material comprising a housing, said housing having a lower portion and a vertically disposed side wall adapted and constructed to define a zone having a bottom for the material, a plurality of vertical tubular means distributed in spaced relationship proximate said side wall, said vertical tubular means having a bottom, said vertical tubular means having a plurality of vertically displaced entranceway means adapted and constructed to communicate with said zone and internally of said vertical tubular means whereby the material may flow from said zone into said vertical tubular means, mixing chamber means positioned in said lower portion of said housing, collection and distribution means communicating with the bottom of said



tubular means and said mixing chamber whereby the material from said vertical tubular means is charged into said mixing chamber means, means for introducing material from the lower portion of said housing into said mixing chamber means, aeration means for distribution of pressurized fluidizing gas into said entranceway means, into said bottom of said zone and into said mixing chamber means and means for removing mixed material from said mixing chamber means.

4,352,570

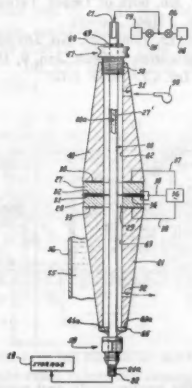
VIBRATORY TREATMENT APPARATUS AND METHOD

Francis G. Firth, Los Angeles, Calif., assignor to Applied Plastics Co., Inc., El Segundo, Calif.

Continuation-in-part of Ser. No. 153,713, May 27, 1980, Pat. No. 4,305,275. This application Jun. 19, 1980, Ser. No. 161,017

Int. Cl.³ B01F *11/02*

U.S. Cl. 366—127 **31 Claims**



1. The method of treating material in a vessel having an axis, the steps that include:

(a) locating transducer means to extend generally about the vessel axis and operating said means for vibrating the vessel to produce oscillating displacement thereof lengthwise and also inwardly and outwardly,

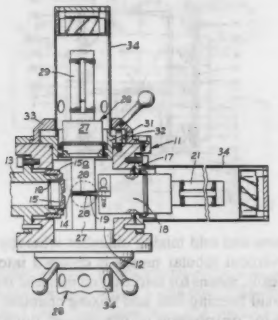
(b) and transmitting said displacement to said material in the vessel,

(c) and simultaneously maintaining the vessel in adjusted tensioned condition, in the direction of said axis.

4,352,571
APPARATUS FOR HOMOGENIZING LIQUIDS

Arthur Grange, and Jack Hollings, both of West Yorkshire, England, assignors to Lucas Industries Limited, Birmingham, England

Filed Mar. 11, 1981, Ser. No. 242,556
Claims priority, application United Kingdom, Mar. 20, 1980, 8009360
Int. Cl.³ B01F *11/02*
U.S. Cl. 366—127 6 Claims

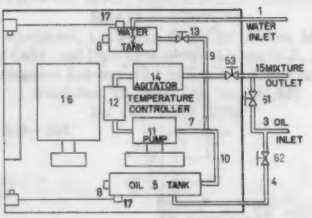


1. Apparatus for homogenizing a liquid, including a hollow body defining a homogenization chamber, a vibratory blade located in the chamber, means for directing a jet of the liquid onto the blade so as to cause the blade to vibrate, and further means for imparting vibrational energy to the liquid in the chamber additional to the vibrational energy imparted thereto by the action of the liquid jet on the blade.

4,352,572
CONTINUOUS AND AUTOMATIC OIL-WATER MIXING METHOD AND ITS INSTALLATION

Hwang-Chuan Chen, No. 19, 2nd Fl. Lane 282 Min Tsu West Rd., and Peter E.P. Jih, both of Taipei, Taiwan, assignors to Hwang-Chuan Chen, Taipei, Taiwan

Filed Jul. 15, 1980, Ser. No. 169,084
Claims priority, application Taiwan, Jan. 9, 1980, 6910049
Int. Cl.³ B01F *3/08*
U.S. Cl. 366—145 14 Claims



1. An installation for continuously and automatically producing an oil-water mixture comprising:

a water tank having means for maintaining water in said tank at a selected temperature and pressure,

an oil tank having means for maintaining oil in said tank at a selected temperature and pressure,

an agitator for intimately mixing water from said water tank and oil from said oil tank, said agitator having an inlet and an outlet,

pump means having an inlet connected with said water tank and said oil tank and an outlet connected with the inlet of said agitator and operable to supply oil and water under pressure to said agitator, and

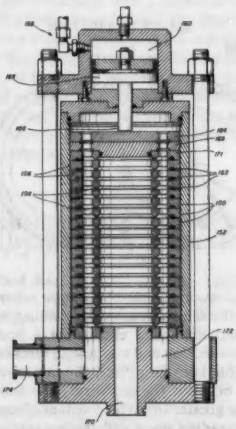
means for controlling the temperature of the oil and water supplied under pressure by said pump means to said agitator,

said agitator comprising a casing having an inlet and an outlet and containing a first set of static elements for producing a swirling motion of oil and water forced through them by said pump and a second set of static elements having a multiplicity of small holes through which said oil and water are forced and thereby intimately mixed with one another.

4,352,573
HOMOGENIZING METHOD

William D. Pandolfe, Billerica, Mass., assignor to Gaulin Corporation, Everett, Mass.

Filed Jan. 29, 1980, Ser. No. 116,601
Int. Cl.³ B01F *5/06*
U.S. Cl. 366—176 2 Claims



1. A method of cleaning a plurality of valve slits between stacked valve members in a fluid mixing or homogenizing valve assembly, at least some of the valve members having valve seats protruding axially therefrom and being spaced from adjacent valve members by rigid spacing means positioned between the valve members, the method comprising:

providing spring elements between the valve members for exerting axial spring forces on the valve members to separate the valve members, the valve members and rigid spacing means being fully compressed into a tight stack and the spring elements being compressed between the valve members by means of a valve actuating means during homogenizing operation of the valve with a valve slit gap between each valve seat and adjacent valve member being determined by said rigid spacing means independent of the spring elements with the valve members and rigid spacing means fully compressed; and

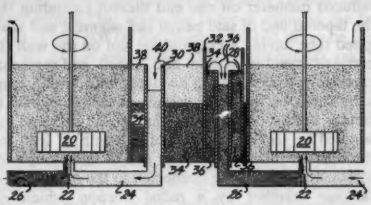
releasing the valve members such that they are separated by the spring elements to allow for substantially larger slit gaps for cleaning of the slits.

4,352,574

MIXER-SETTLER APPARATUS

Norvald Gjelsvik, Oslo, Norway, assignor to Forskningsgruppe for Sjeldne Jordarter, Oslo, Norway

Filed Nov. 5, 1979, Ser. No. 91,481
Claims priority, application Norway, Oct. 12, 1978, 783453
Int. Cl.³ B01F *15/02;* B01D *21/24*
U.S. Cl. 366—194 1 Claim



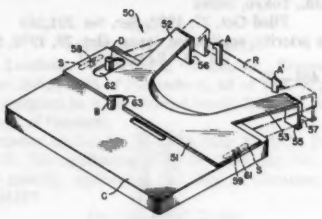
1. In a mixer-settler apparatus comprising a mixer chamber and a settler chamber and heavy phase and light phase exit tubes in said settler chamber, the improvement comprising each said exit tube being positively vertically adjustable in height, the positive vertical adjustment in height being accomplished through a threaded portion of the bottom of each said exit tubes.

4,352,575

RIBBON CARTRIDGE AND ADAPTER

Sydney Shore, 38-04 48th St., Long Island City, N.Y. 11104

Filed Oct. 8, 1980, Ser. No. 195,025
Int. Cl.³ B41J *35/28*
U.S. Cl. 400—250 8 Claims



1. A ribbon cartridge loading adapter for use with a ribbon cartridge having a substantially planar top surface, the adapter comprising: a substantially planar body portion having means cooperating with the top surface of the ribbon cartridge for mounting same on the top surface of a ribbon cartridge for movement between extended and retracted positions and two substantially planar spaced apart arms extending outwardly from the body portion parallel thereto and having downwardly depending means at the termini thereof for releasably retaining a run of ribbon.

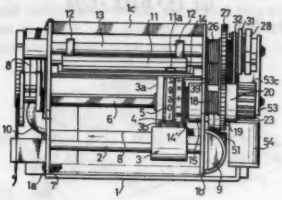
4,352,576

SERIAL PRINTER HAVING A SINGLE DRIVE MOTOR

Fumihisa Hori; Tadao Tamukai, both of Tamayama, and Mikio Miyajima, Nishine, all of Japan, assignors to Alps Patent Department, Tokyo, Japan

Filed Jul. 8, 1980, Ser. No. 166,774
Claims priority, application Japan, Jul. 9, 1979, 54-86756
Int. Cl.³ B41J *9/02, 9/38, 19/72*
U.S. Cl. 400—154.4 8 Claims

1. A printer comprising:
a motor;
a rotary shaft adapted to be rotated unitarily with type wheels and adapted to be driven rotatably by said motor;
first clutch means for selectively transmitting the rotation of said motor to said rotary shaft;
a hammer member adapted to be moved into and out of contact with said type wheels;
a hammer drive shaft adapted to be driven by said motor and carrying a cam member for actuating said hammer member;
second clutch means adapted for selectively transmitting the rotation of said motor to said hammer drive shaft,
control means for controlling said first and second clutch means simultaneously to engage one of said clutch means while disengaging the other; further comprising



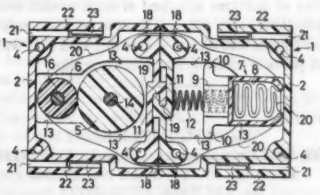
a carriage carrying said type wheels and slidable in a direction parallel to said rotary shaft;
a spring member connected to one end of said carriage and adapted to urge said carriage toward the initial position;
a thread member connected to the other end of said carriage; and
means adapted to gather said thread means to overcome the force of said spring member, said gathering means being actuated by rotation of said hammer drive shaft when the latter is driven through said second clutch means.

4,352,577

CASSETTE TYPE INK RIBBON DEVICE

Yoshinori Chida, and Satoru Tada, both of Tokyo, Japan, assignors to Seikosha Co., Ltd., Japan

Filed Sep. 23, 1980, Ser. No. 190,066
Claims priority, application Japan, Nov. 5, 1979, 54-143010; Nov. 5, 1979, 54-143012; Apr. 8, 1980, 55-45487[U]
Int. Cl.³ B41J *32/02, 31/16*
U.S. Cl. 400—196.1 8 Claims



1. In a cassette type ink ribbon device of the type comprising a pair of cassette cases releasably connected together prior to mounting on a printing apparatus and being separatable for mounting on the printing apparatus during use of the device; an endless ink ribbon having a slack part stored within either of said pair of cassette cases prior to the mounting operation and which is withdrawn so as to extend through said cassette cases during the mounting operation; a transfer roller and an ink roller rotatably mounted within one of said pair of cassette cases in order to replenish ink onto said ink ribbon and which are in contact with each other; and a tensioner for applying a tensioning force to said ink ribbon and disposed within the other of said pair of cassette cases; the improvement wherein

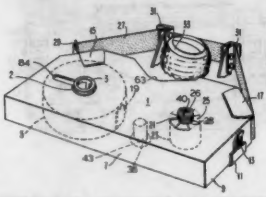
said tensioner comprises a slidably supported guide body having means therein defining a cavity in which said slack part of the ink ribbon is stored prior to the mounting operation, and a biasing spring for biasing said guide body so as to apply a tensoning force to the ink ribbon.

4,352,578

PAPERBOARD RIBBON CARTRIDGE

Norman D. Dunning, Harrodsburg; Franklin D. Jervis, Lexington, and Kenneth W. Taylor, Georgetown, all of Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 8, 1980, Ser. No. 185,105
Int. Cl.³ B41J *35/28*
U.S. Cl. 400—208 **35 Claims**



31. A cartridge containing a typewriter ribbon and formed from a flat blank comprising:

a first portion for forming the top of said cartridge, said first portion further defining a pair of apertures for rotatably receiving a take-up and supply spool, respectively;

second and third portions bendably attached to said first portion for forming the front of said cartridge;

a fourth portion attached to the side of said second and third portions opposite said first portion and bendable with respect to said second and third portions for forming the bottom of said cartridge, said fourth portion further comprising surfaces defining a plurality of apertures therein, two of said apertures positioned and sized, with respect to said apertures in said first portion to rotateably support said supply and take-up spools, respectively, a third aperture defined by said bottom portion to permit entry of a control part of a ribbon feed mechanism, and a fourth aperture, interconnecting with and extending out from said aperture for rotateably supporting said take-up spool,

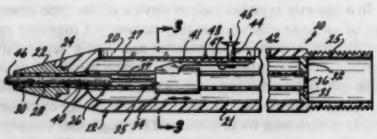
a plurality of portions attached at least to said first portion and bendable with respect thereto to form side walls of said cartridge, and means for joining said side walls to said fourth portion to complete said cartridge.

4,352,579

WRITING IMPLEMENT

Hyon P. Yi, 6941 Chimineas Ave., Reseda, Calif. 91335

Filed Apr. 17, 1981, Ser. No. 255,045
Int. Cl.³ B43K *27/02, 21/18*
U.S. Cl. 401—19 **1 Claim**



1. A writing implement comprising:

a hollow pencil end-segment having a taper on one end thereof and threads on the other end thereof, said pencil end-segment having a longitudinal slot in the wall thereof, the inner surface of said wall adjacent said longitudinal slot being provided with serrations;

a hollow pen end-segment having a taper on one end thereof and threads on the other end thereof, said pencil and pen end-segments having their threaded ends engaged to form a single body;

an elongated tube extending through the longitudinal axis of said pencil end-segment, said elongated tube having a reduced diameter on one end thereof extending through the tapered end of said pencil end-segment and said elongated tube having a longitudinal slot on the wall thereof;

a carriage member within said pencil end-segment, said carriage member having an outer wall which longitudinally slides on the outer surface of said elongated tube;

a tubular holder on the front end of said carriage member adapted to receive the end of a length of lead inserted through the reduced diameter end of said elongated tube;

said tubular holder being connected to the outer wall of said carriage member by a radial portion which extends through the longitudinal slot on said elongated tube;

a cantilevered arm on said carriage member having an arcuate outer edge normally resiliently engaging the serrations on the inner surface of the wall of said pencil end-segment;

a button having a stem extending through the longitudinal slot on the wall of said pencil end-segment and attached to said arm near the arcuate outer edge thereof; and

a replacable unit including a magazine for ink within said pen end-segment, said unit having a steel ball point member on the outer end thereof extending out of the tapered end of said pen end-segment.

4,352,580

KNOCK-OUT TYPE MECHANICAL PENCIL WITH RETRACTABLE ERASER

Yoichi Ando, Yokohama, Japan, assignor to Mitsubishi Pencil Co., Ltd., Tokyo, Japan

Filed Oct. 27, 1980, Ser. No. 201,243
Claims priority, application Japan, Oct. 29, 1979, 54-148875
Int. Cl.³ B43K *29/02*
U.S. Cl. 401—29 **4 Claims**

1. A knock-out type mechanical pencil comprising:

a tubular cylindrical body (1) invertable between a writing position and an erasing position, said body having a first end oriented downwardly when the pencil is in the writing position and a second, opposite end;

a cylindrical knock-button member (2) axially slidably inserted into said second end of said cylindrical body for feeding writing lead to said first end, said cylindrical knock-button member having an axial hole (4);

a supporting rod (8) inside said knock-button member (2) and having first and second ends (12, 9) oriented the same as said first and second ends of said body, said supporting rod (8) being axially slidably movable in said cylindrical knock-button member (2) by the inversion of said body (1);

an eraser (11) mounted on the second end (9) of said supporting rod (8) and extendable from within said knock-button member (2) through said axial hole (4) by movement of

said rod (8) when said body (1) is inverted to the erasing position;

a tubular cylindrical weight (16) surrounding said supporting rod (8) and slidable therealong towards said first and second ends by the inversion of said body;

an annular, inwardly extending guide portion (15) formed on the interior of said cylindrical knock-button member (2) and surrounding said rod, said guide portion (15) being so located on said knock-button member (2) as to coact with said weight (16) when the latter is adjacent the first end (12) of said rod (8) for causing the rod (8) to be generally on the axis of said knock-button member (2), said weight (16) being free of said guide portion (15) when adjacent the second end (9) of said rod (8) to allow said first end (12) of said rod to assume a non-axial condition with respect to said cylindrical knock-button member (2);

a tubular cylindrical element (13) fixedly disposed within said knock-button member (2), said element (13) surrounding said rod (8) when said body is in the writing position, said first end (12) of said rod (8) engaging said element (13) when said rod (8) is in the non-axial condition for preventing movement of said rod towards said first end of said body;

said pencil having a cylindrical holder (10) for said eraser (11) mounted on said second end (9) of said supporting rod (8) within said knock-button member (2) and slidably contacting the interior surface of said knock-button member (2), said holder (10) and knock-button member interior surface being formed to prevent said holder (10) from turning with respect to said knock-button member (2); and

an additional cylindrical weight (17) surrounding said supporting rod (8) and positioned above said tubular weight (16) when said body is in said writing position, said additional weight (17) having an outer diameter slightly larger than the inner diameter of said inwardly extending guide portion (15).

4,352,581

MECHANICAL PENCIL

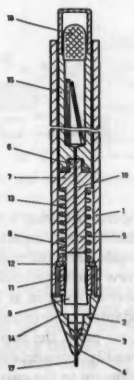
Werner Leuthold, Schwabach; Svatopluk Krumnikl, and Günther Babel, both of Nuremberg, all of Fed. Rep. of Germany, assignors to A. W. Faber-Castell, Stein bei Nuernberg, Fed. Rep. of Germany

Continuation of Ser. No. 910,504, May 30, 1978, Pat. No. 4,247,215. This application Mar. 24, 1980, Ser. No. 133,137

Claims priority, application Fed. Rep. of Germany, May 28, 1977, 2724317

Int. Cl.³ B43K *21/00*

U.S. Cl. 401—85 **29 Claims**



1. In a mechanical pencil, a combination comprising a housing having a front end portion provided with a tip, and a rear end portion; a lead-containing cartridge bounding an interior adapted to contain a plurality of leads, and having a leading end portion provided with an outlet passage having one end open into and communicating with said interior and another end longitudinally spaced from said one end, said cartridge being removably insertable into said rear end portion of said housing; lead-feeding means reciprocable in said housing for incrementally advancing leads from said rear end portion to and outwardly beyond said tip; means at said leading end portion of said cartridge for coupling engagement with said lead feeding means; means for blocking said passage until such coupling engagement is effected; and means for unblocking said passage by acting upon said blocking means in response to such coupling engagement, said blocking and unblocking means being shaped and cooperate with each other so that after acting of said unblocking means upon said blocking means the latter ceases to block said passage and also does not intrude into said interior of said cartridge.

4,352,582

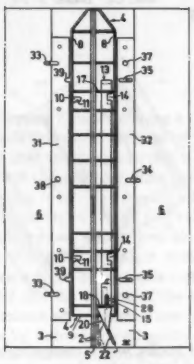
LOOSE LEAF BINDER

Erik Eliasson, Ubbas, S-332 00 Gislaved, Sweden

Filed Jan. 8, 1980, Ser. No. 110,754

Int. Cl.³ B42F *13/22, 13/36*

U.S. Cl. 402—38 **6 Claims**



1. A loose leaf binder for apertured loose leaves including:

a pair of hinged plastic back sections having a substantially angular cross section;

a cover pivotally connected to each of said back sections;

an elongated metal plate extending substantially parallel to the hinge axis of said hinged back sections and rigidly secured to each of said back sections;

a plurality of arcuate prongs lying in planes substantially perpendicular to said hinge axis, and rigidly secured to each of said metal plates;

a locking member secured to one of said back sections and having at least one hook portion;

an elongated, slidable latch member for interengagement with said locking member;

means for manually displacing said latch member in its longitudinal direction between a locking position and a release position,

said latch member having a notch for receiving the hook portion of the locking member when the binder is closed and the latch member is in its locking position; and

means for resiliently biasing said latch member towards its locking position,

wherein at least one of said arcuate prongs is secured to said metal plates nearer, and extends at a smaller radial distance from, the hinge axis of said hinged back sections than others of said prongs and is positioned for engagement with and abutment against an edge of said loose leaves,

said other arcuate prongs being positioned for passage through the apertures of said apertured loose leaves,

wherein a reinforcing lattice, which at least partly consists of plastic and comprises at least one longitudinal wall substantially parallel to said hinge axis and a plurality of transverse walls substantially perpendicular thereto, is united with each of said back sections, and

wherein said locking member extends substantially perpendicular to said hinge axis and has its hook portion projecting substantially in the direction of said hinge axis, and wherein said elongated latch member extends substantially parallel to said hinge axis and passes through slots provided in the transverse walls of the lattice of the other back sections.

4,352,583

BINDERS FOR TELEPHONE DIRECTORIES AND LIKE BOOKS AND TAMPER PROOF LANYARD SUSPENSION THEREOF

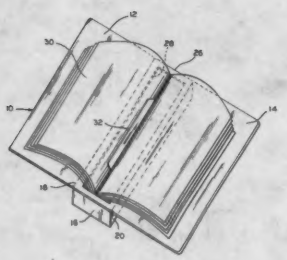
Dominic R. Errichiello, 389 Meadowlark Rd., Bloomingdale, Ill. 60108

Continuation-in-part of Ser. No. 63,832, Aug. 6, 1979, Pat. No. 4,255,065. This application Feb. 19, 1980, Ser. No. 122,312

The portion of the term of this patent subsequent to Mar. 10, 1998, has been disclaimed.

Int. Cl.³ B42D *3/10*

U.S. Cl. 402—75 **18 Claims**



1. A binder for books, which comprises a front cover panel, a rear cover panel, and a spine along whose opposite longitudinal edges the front and rear cover panels respectively are hingedly connected, and means for protectively securing on said spine and between said cover panels a book, said means being a thin metal member with oppositely extending wings adapted to lie between and against the bound edges of the pages of the directory and a thin edged tongue adapted to penetrate the bound edges of said pages and project through a slot in the spine, and means coacting with said spine-projecting part, and said spine for locking said tongue and said wings in book-securing position to prevent removal of said book from said binder, and the spine of said binder having a rectangular well formed by opposite side walls and opposite end walls for securely holding the back of said book or the backs of two or more books.

4,352,584

METHOD OF PRODUCING A JOINT CAPABLE OF TRANSMITTING HIGH TORQUE

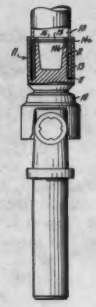
Derek R. Smith, Bristol, England, assignor to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 954,112, Oct. 24, 1978, Pat. No. 4,190,479, which is a continuation of Ser. No. 753,819, Dec. 23, 1976, abandoned. This application Sep. 12, 1979, Ser. No. 74,432

Int. Cl.³ F16D *1/00*

U.S. Cl. 403—13 **4 Claims**

1. A joint comprising a tubular shaft and an end fitting provided with a mating section having two concentric cylindrical walls which describe an annular cavity, said shaft being positioned in said annular cavity between the two concentric cylindrical walls and bonded to said walls by means of a cured bonding agent, said shaft being axially aligned with said end fitting by means of a resilient sealing ring positioned near the top of the inner cylindrical wall of the mating section of the end fitting and between said inner cylindrical wall and the



interior wall of said shaft and a parallel annular shoulder positioned near the base of said inner cylindrical wall, said annular shoulder having an outer diameter which is slightly greater than the diameter of said inner cylindrical wall such that the lower end of said shaft fits snugly over said annular shoulder to thereby enclose and seal off said annular cavity while completely filled by said bonding agent.

4,352,585

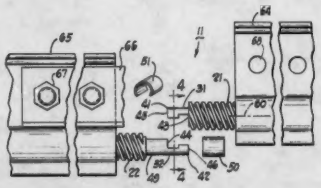
DOOR OPERATOR SCREW COUPLING

Wilbur J. Spalding, Alliance, Ohio, assignor to The Alliance Manufacturing Company, Inc., Alliance, Ohio

Filed Mar. 6, 1980, Ser. No. 127,760

Int. Cl.³ E05F *11/00*

U.S. Cl. 403—24 **19 Claims**



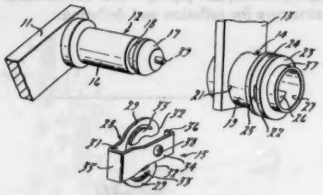
1. In a garage door operator having a motor-driven screw at least partially within guide means, a partial nut guided by said guide means and movable longitudinally therealong by engagement with said screw and connectable to open and close the garage door, the screw being in at least first and second parts, and a coupling adapted to interconnect adjacent ends of the first and second screw parts, the improvement comprising said coupling being readily connectable and being disconnected at the time of shipment to the customer said coupling in the connected condition being capable of being traversed by the partial nut, the first screw part having a portion adapted to about and directly transmit torque both clockwise and counterclockwise to the second screw part.

4,352,586

LINKAGE SYSTEM

William L. Hayden, Northville, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 29, 1980, Ser. No. 220,625
Int. Cl.³ F16C *11/06*; F16D *1/12, 3/00*
U.S. Cl. 403—163 7 Claims



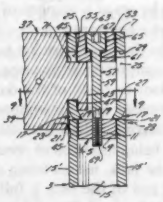
1. A linkage system, comprising:
a crank arm having an upstanding crank pin,
a drive link having an aperture in which a cylindrical bushing is mounted,
the crank pin being journalled in the bushing,
the bushing and crank pin having external annular grooves axially aligned outwardly of the crank arm and drive link,
the bushing having diametrically opposed apertures extending through the bottom of its groove in communication with the crank pin groove,
and a retainer clip seated in the bushing groove and projecting through the opposed apertures into the crank pin groove to interlock the bushing and crank pin against substantial axial displacement,
the retainer clip further having manually disengageable retention means engaged with the assembled bushing and crank pin to prevent radial displacement of the clip from its bushing and crank pin interlocking position.

4,352,587

LOCKING ASSEMBLY FOR STRUCTURAL PRODUCTS

Frederick Milz, 6002 Westbury Ave., Montreal, Quebec, Canada (H3W 2W9)

Filed Jul. 9, 1980, Ser. No. 167,208
Claims priority, application Canada, Jul. 9, 1979, 331374
Int. Cl.³ F16B *7/22*
U.S. Cl. 403—252 9 Claims



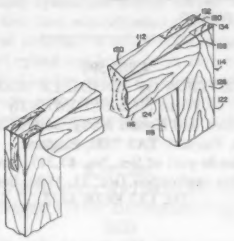
1. A construction for use in knockdown structures comprising: a tubular leg with (an anchor) a plug member (fixed) fixedly secured within the leg near one end of the leg by a portion of said leg, one longitudinal slot provided in the wall of the leg, the slot located between the (anchor) plug member and the one end of the tube and spaced from the (anchor) plug member; an elongated cross-bar having a tab extending from at least one end of the bar, the tab having a notch formed on one side of the tab adjacent the end of the bar; the cross-bar connected to the leg by sliding the tab through the slot until the end of the bar abuts the wall of the leg and then moving the cross-bar in a direction away from the one end of the leg to move the wall of the leg into the notch in the tab to prevent withdrawal of the cross-bar; and locking means to prevent the cross-bar from being moved in a directon back toward the one end of the leg, the locking means sized to fit within the one end of the leg and to attach to the (anchor) plug member while overlying the tab of the cross-bar to prevent its movement toward the one end of the leg (.) and comprising a retaining member for overlying the tab and internal adjustable bolt means for connecting the retaining member and the plug member to urge the members together and prevent the movement of the tab.

4,352,588

WOOD JOINT

Benjamin Davies, III, 518 Sterling Ave., Chattanooga, Tenn. 37405

Filed Aug. 7, 1980, Ser. No. 176,010
Int. Cl.³ B25G *3/08*
U.S. Cl. 403—382 9 Claims



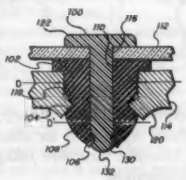
6. A method of forming a joint between a rail and a stile of a frame structure such that facial surfaces of the rail and stile are coextensive and abut at an edge having a curvilinear configuration, said method comprising cutting said edge in each of said rail and stile with a router tool having a rotatable cutting bit of a radius r_c, the cutting of one of said rail and stile being performed while guiding said router tool along a guide template by following said guide template with a first annular guide member having a guide surface of a radius r_1 concentric about said cutting bit and the cutting of the other of said rail and stile being performed while guiding said router tool along said guide template by following said guide template with a second annular guide member having a guide surface of a radius substantially equal to r_1+2r_c concentric about said guide surface, said method including the step of forming said guide template with the same configuration as said curvilinear edge but displaced from said edge by a distance substantially equal to the sum of the radius of the cutting bit (r_c) plus the radius of the first annular guide member (r_1).

4,352,589

BLIND RIVETING AND SEALING SYSTEM

Kenneth C. Allison, Crystal Lake, and William H. Cooley, Winnetka, both of Ill., assignors to Almedco, Inc., Crystal Lake, Ill.

Filed Jul. 20, 1981, Ser. No. 284,824
Int. Cl.³ B25G *3/00*; F16D *1/00*; F16G *11/00*
U.S. Cl. 403—408 14 Claims



1. A blind riveting system comprising, sheet means having a

hole of diameter D with a smaller diameter step therein to thereby form a resilient annular locking flange in said hole, and rivet means inserted in said stepped hole and adapted to be locked in position therein by said resilient annular locking flange, said rivet means consisting of head means and body means wherein

said head means has a diameter sufficiently larger than the maximum diameter (D) of said hole to prevent its insertion in said hole, and

said body means comprises

an upper shank portion having a diameter that results in a force fit with the diameter D position of the hole and thereby forming a first seal therebetween,

a tapered portion,

a beveled locking seal face for engaging said resilient annular flange over its entire width to thereby form a second seal therebetween,

and a pilot tip portion.

4,352,590

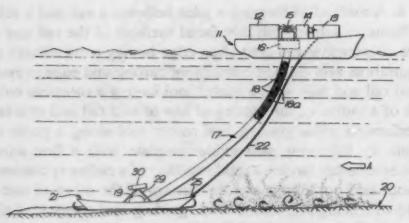
STABILIZATION OF ERODIBLE MARINE OR FLUVIATILE SEDIMENTS

William R. Parker, and Robert Kirby, both of 3 Curdleigh La., Blagdon Hill, Taunton TA3 7SH, England

Continuation-in-part of Ser. No. 47,217, Jun. 11, 1979, abandoned. This application Dec. 11, 1980, Ser. No. 215,387

Int. Cl.³ E02B 3/12

U.S. Cl. 405—17 **14 Claims**



1. A method of stabilizing an erodible marine or fluviatile sediment comprising the steps of depositing directly over the sediment to be stabilized a slurry comprising a framework of rigid particles greater than 2 mm. least dimension and less than 100 cm. least dimension in generally touching relation and a non-setting paste-like or colloidal matrix material filling voids between particles of said framework.

4,352,591

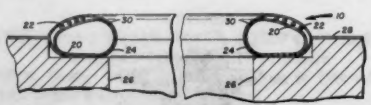
PNEUMATIC TOROIDAL WEIR

Worthington J. Thompson, 109 Powell St., Snow Hill, Md. 21863

Filed Aug. 11, 1980, Ser. No. 177,089

Int. Cl.³ E02B 7/00

U.S. Cl. 405—87 **1 Claim**



1. A pneumatic convoluted toroidal weir, comprising:

a tube-like structure formed of an elastic membrane-like material, said tube-like structure being convoluted and toroidal in configuration;

a plurality of chines constructed of a semi-rigid material, said chines being concentric with each other around said tube-like structure and affixed to a portion of the outer surface of said tube-like structure;

a plastic holder means, said holder means being half-dish-like and circular and sized to hold said tube-like structure therein;

a connecting means, said connecting means attaching said tube-like structure to said holder means;

a piping means, said piping means connected to said tube-like structure for inflation and deflation.

4,352,592

GATE SYSTEM FOR A HYDRAULIC DAM

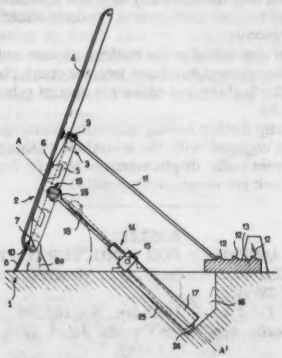
Jean Aubert, 8, rue La Boetie, 75008 Paris, France

Filed Jun. 4, 1980, Ser. No. 156,390

Claims priority, application France, Jun. 12, 1979, 79 14986

Int. Cl.³ E02B 7/40

U.S. Cl. 405—102 **23 Claims**

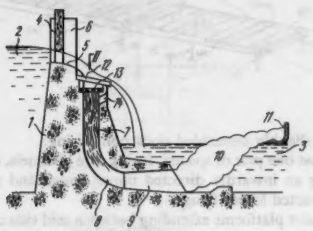


1. A gate system for a hydraulic dam comprising at least one wicket which can be set at a number of predetermined angles of inclination about a horizontal shaft which is attached to the floor or body of the dam, each wicket being provided with an operating device comprising on the one hand a jack pivotally mounted on the floor or body of the dam downstream of the wicket and on the other hand an abutment member rotatably mounted on a horizontal shaft carried by the wicket, said abutment member being intended to receive the free end of the operating rod of the jack, means being provided for ensuring that the operating rod of the jack is fully withdrawn into the jack body between two operations of said wicket, wherein the operating device comprises restoring means which tend to move the jack to an end angular orientation about its axis of pivotal motion, said end angular orientation being close to the different orientations assumed by the jack when the operating rod of said jack is in engagement with the abutment member in the different predetermined positions of inclination of the wicket, the end of the operating rod of the jack and the abutment member being provided with coupling means comprising a cup-like member and a convex member one of which is carried by the abutment member and the other by the end of the jack, the cup-like member being large enough to contact and receive therein the convex member in any of the predetermined inclinations of the wicket when the operating rod of the jack is being extended out of the jack body in the said end angular orientation of the jack.

4,352,593
DAM SPILLWAY

Anton L. Iskra, ulitsa Magdagulovoi, 8, korpus 1, kv. 65, Moscow; Mikhail S. Kharchenko, ulitsa Semashko, 8, korpus 1, kv. 135, Zhukovsky Moskovskoi oblasti, and Jury N. Vasiliev, ploschad Vosstania, 1, kv. 60, Moscow, all of U.S.S.R.

Filed Dec. 23, 1980, Ser. No. 219,901
Int. Cl.³ E02B 8/06
U.S. Cl. 405—108 3 Claims

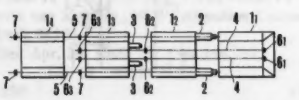


1. A dam spillway to pass water over the crest from a forebay into an afterbay, comprising:
- a vertically disposed mixing chamber having an inlet section opening into the atmosphere;
- a horizontally mounted diffuser communicating with said mixing chamber; an upper wall of said diffuser;
- a flotation zone;
- an intake arrangement of said mixing chamber, ensuring formation of said flotation zone downstream of said diffuser;
- a water flow divider of said intake arrangement, located above said mixing chamber and made in the form of a screen composed of chutes;
- a water breaking grid of said intake arrangement, installed transversely in said inlet section of said mixing chamber and composed of bluff members;
- air intake ducts of said intake arrangement, made in a wall of said mixing chamber below said water breaking grid in close proximity thereto;
- a froth collector arranged on the surface of said afterbay downstream of said flotation zone.

4,352,594
METHOD AND APPARATUS FOR CONSTRUCTING UNDERGROUND STRUCTURE

Koichi Uemura, No. 1-3-11, Sakura-machi, Koganei-shi, Tokyo, and Makoto Uemura, No. 3-5-8, Hon-cho, Koganei-shi, Tokyo, both of Japan

Filed Aug. 25, 1980, Ser. No. 180,936
Int. Cl.³ E21D 9/00, 11/40
U.S. Cl. 405—138 42 Claims

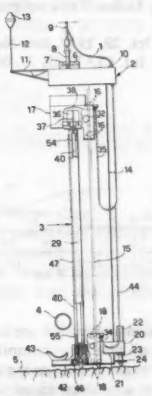


1. A method for constructing an underground structure by advancing underground a plurality of serially adjoining cylindrical bodies one after another, wherein a reaction force required for advancing each cylindrical body is obtained from the sum of reaction forces available from other cylindrical bodies and/or a reaction facility additionally provided; a cylindrical body pushing facility is formed with a thrusting jack advancing arrangement provided between selected ones of said cylindrical bodies; a cylindrical body connecting facility is formed with connecting members arranged to pierce through a required number of said serially adjoining cylindrical bodies, with fasteners attached to the connecting members at required points and with a pulling jack advancing arrangement or a pulling/thrusting jack advancing arrangement arranged to engage said cylindrical bodies; a pulling facility is formed with traction members arranged to pierce through a first group of a required number of cylindrical bodies, through a reaction facility or a second group of cylindrical bodies disposed on one side opposite to the side on which the first group are disposed and through a horizontal hole or the like arranged underground beforehand across a distance between said two sides, said traction members being provided with fixing pieces and a pulling jack advancing arrangement or a pulling/thrusting jack advancing arrangement which are attached thereto and are arranged to engage said cylindrical bodies and said reaction facility at desired points; the advancing facilities including said pushing, connecting and pulling facilities are operated as desired to have said cylindrical bodies moved forward underground one by one; then said advancing facilities are removed; and a cylindrical structure is constructed underground either by unifying said cylindrical bodies with each other or by having the cylindrical bodies installed on both ends of the underground structure with intermediate portion thereof constructed by a suitable conventional construction method.

4,352,595
APPARATUS FOR AND METHOD OF SUPPORTING PIPE SUSPENDED OVER DEPRESSIONS IN THE SEA BED

Ambrogio Scodino, S. Donato MI, Italy, assignor to Saipem S.p.A, Milan, Italy

Filed May 16, 1980, Ser. No. 150,418
Claims priority, application Italy, May 29, 1979, 23083 A/79
Int. Cl.³ F16L 1/04
U.S. Cl. 405—158 4 Claims



1. In apparatus for supporting pipe suspended over depressions in the sea bed, even at great depths, having a service module and a support module for supporting the pipe, the improvement which comprises:
- a support module which has a pile adapted to be inserted into the sea bed that has a rotatable rod at its upper end which drills said pile into the sea bed, and
- a recoverable service module which is connected to said support module in such a manner that it can be separated therefrom by remote control means and which arranges and maintains said support module in a vertical position on the sea bed as said pile is inserted into the sea bed, including:
  - (a) a vertical upright having at its upper end a horizontal

beam terminating in a bracket, the free end of which is connected to a float, and having at its lower end three horizontal arms, at the ends of which are fixed three vertical hydraulic cylinders with adjustable pistons that terminate in points provided with support discs to form a tripod structure on which the upright rests,

(b) a rack and two lateral guides fixed longitudinally to one side of said vertical upright,

(c) a first electric motor-driven carriage slidable along said rack and lateral guides having a recoverable control head which contains an electric motor that engages and rotates said rod for drilling said pile into the sea bed, and coupling means releasably connecting said head to the upper end of the pile adapted to release said head from said pile after the vertical insertion thereof into the sea bed,

(d) a second carriage having an electric motor and a pinion which engages said rack for movement along said vertical upright,

(e) a bracket-shaped slide having a seat for supporting the pipe wherein said slide is connected to said second carriage and is slidable along the pile of the support module,

(f) coupling means releasably connecting the second carriage to said bracket-shaped slide adapted to release said slide when the pipe is seated and suspended over the depression on the sea bed, and

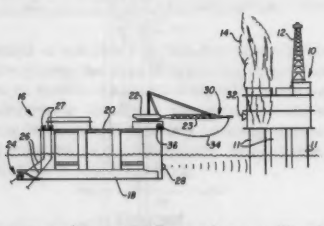
(g) a cable adapted to be under tension connected to said service module for lowering said module to the sea bed and for recovering said sevice module after the pipe is seated and suspended over the depression on the sea bed and said service module is separated from said support module.

4,352,596

STAB SYSTEM FOR EQUIPMENT REMOVAL

Dillard S. Hammett, Dallas, Tex., assignor to Sedco, Inc., Dallas, Tex.

Filed Oct. 29, 1979, Ser. No. 89,186
Int. Cl.³ E02B *17/00*
U.S. Cl. 405—195 **4 Claims**



1. A fire suppression system for use in controlling fires occurring on offshore oil platforms comprising:

a self-propelled service vessel having a means for maintaining said vessel at a predetermined station with respect to said platform;

a stab assembly including a stab adapted to engage a stab receptacle on said platform and means for controlling the movement of said stab;

tension means interconnecting said stab and said vessel;

means extending from said vessel for supporting said stab assembly;

a plurality of walls cooperating to form a compartment for housing operating equipment;

a stab receptacle mounted to said platform, said receptacle including a guide means;

means for locking said stab in said receptacle; and

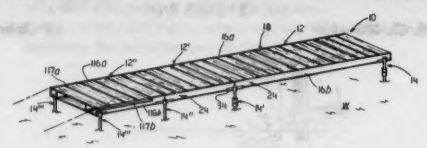
second tension means connecting said equipment to said receptacle, said equipment being removable from said platform by the application of a tensile load to said receptacle.

4,352,597

SLIDE DOCK

Charles Kay, 3401 Burton Ridge Rd., SE., Grand Rapids, Mich. 49506

Filed Jan. 12, 1981, Ser. No. 224,216
Int. Cl.³ E02B *3/20*
U.S. Cl. 405—219 **10 Claims**



1. A slidably assembled dock comprising:

at least one pair of spaced, facing side channels, each including an inwardly directed upper flange and an inwardly directed lower flange;

modular platforms extending between said side channels and having edge portions slidably received in said side channels;

said modular platforms being formed of an upper layer and a lower layer spaced therefrom, and elongated stringers interconnecting said layers;

said lower layer supported on said lower flanges of said side channels and said upper layer interfitting with said upper flanges;

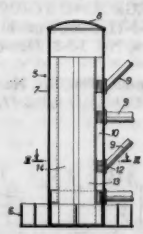
tying connector means for maintaining said side channels within a predetermined maximum spacing of each other; and support means for vertically supporting said dock.

4,352,598

CONCRETE STRUCTURE FOR THE TRANSMISSION OF LOADS FROM THE STEEL LATTICE OF A MARINE PLATFORM AND A METHOD OF FORMING SAID STRUCTURE

Hubert J. L. Parat; Dominique Michel, both of Paris, and Francois G. Sedillot, Velizy, all of France, assignors to Compagnie Generale pour les Developpements Operationnels des Richesses Sous-Marines "C.G. Doris", Paris, France

Filed Feb. 6, 1980, Ser. No. 118,917
Claims priority, application France, Feb. 7, 1979, 79 03108
Int. Cl.³ E02B *17/00*; E02D *29/06*
U.S. Cl. 405—222 **10 Claims**



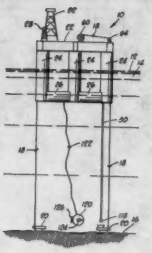
1. A concrete structure for the transmission of loads from the steel lattice of a marine platform resting on the sea bed by means of concrete base plates, the lattice being made up of lattice members which form bracing joints with the legs of the platform, the concrete structure comprising: a base plate; a cylindrical hollow body leg member fixed to the base plate; concrete walls within the hollow body; enclosed spaces defined by said concrete walls and by part of the hollow body; and concrete fixing plugs, at least a part of each fixing plug being affixed to said walls defining the enclosed spaces and to the end of an associated lattice member.

4,352,599

PERMANENT MOORING OF TENSION LEG PLATFORMS

Riley G. Goldsmith, Houston, Tex., assignor to Conoco Inc., Ponca City, Okla.

Filed Aug. 4, 1980, Ser. No. 175,101
Int. Cl.³ E02B 17/00
U.S. Cl. 405—224 19 Claims



1. A method of installing a permanent vertical tethering element between a floating structure and an anchor means, said method comprising steps of:

providing on said anchor means an upward opening guide funnel located above a connector means for connecting a lower end of said permanent vertical tethering element to said anchor means;

temporarily mooring said floating structure to said anchor means with a plurality of substantially vertical temporary mooring lines held in tension by a buoyancy of said platform;

while said floating structure is temporarily moored, lowering said permanent vertical tethering element from said floating structure until said lower end thereof is located a relatively short distance above said anchor means;

observing, with an underwater television camera, a location of said lower end of said permanent vertical tethering element relative to said guide funnel of said anchor means;

moving said lower end of said permanent vertical tethering element laterally as necessary to position it above said guide funnel;

stabbing said lower end of said permanent vertical tethering element into said guide funnel;

guiding, by means of said guide funnel, said lower end of said permanent vertical tethering element into engagement with said connector means; and

connecting said lower end of said permanent vertical tethering element to said connector means.

4,352,600

DEVICE AND METHOD FOR CONTROLLING TIME DEPENDENT PARAMETER VARIABILITY

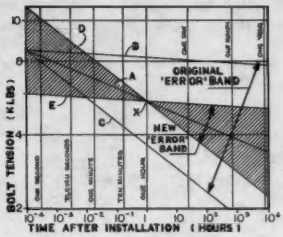
Carel J. H. Brest van Kempen, 4920 Emigration Canyon, Salt Lake City, Utah 84104

Filed Apr. 30, 1980, Ser. No. 144,987
Int. Cl.³ E21D 21/00
U.S. Cl. 405—259 7 Claims

1. A method for controlling long term uniformity of a parameter in a population of similar processes, where said processes are characterized by an exponential change of said parameter with time, the rate of said exponential change with time being randomly variable from one individual representative of said process to the next, the invention comprising the steps of:

identifying the exponential change rate of said exponentially changing parameter for each individual representative of said process;

determining the required initial value for said parameter to change to a particular value at a particular time in the future based on the previously identified exponential change rate for each individual representative of said process, said particular value of said parameter as well as said particular time in the future being the same for all individual representatives of said process; and



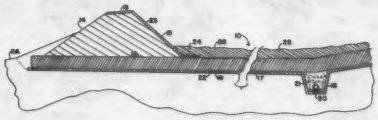
adjusting the initial value for said parameter to the desired level for each individual representative of said process as determined in the previous step.

4,352,601

PERMANENT BIN FOR TEMPORARY STORAGE OF HAZARDOUS MATERIALS

Richard E. Valiga, Center Square, and John R. Rosso, Mechanicsburg, both of Pa., assignors to Stabatrol Corporation, Norristown, Pa.

Filed Aug. 18, 1980, Ser. No. 178,965
Int. Cl.³ E02D 3/00; E02B 3/16
U.S. Cl. 405—270 7 Claims



1. A storage bin for temporary storage of hazardous, nonvolatile substances comprising:

an excavation basin having an elevated periphery and a surface which slopes from said periphery along a collection path;

a water-impervious liner for said basin comprising a water-impervious film;

a water-impermeable covering for said liner comprising a monolithic layer of hardened cementitious material;

a perimeter wall above and inside the rim of said water-impervious covering;

said perimeter wall having a crest, an annular sloping outer surface and an annular sloping inner surface;

a liquid-impervious coating over said annular sloping inner surface and over a continguous annular margin of the said water-impermeable covering;

a monitoring drain comprising a collector conduit along the central region of said excavation basin beneath the said water-impermeable covering and above the said film;

a collection sump located outside said perimeter wall;

said collector conduit communicating with said collecting sump;

said excavation basin being above the high water table level of the region.

4,352,602

ROOF SUPPORT FOR A MINE GALLERY WHICH EXTENDS AT A RELATIVELY LARGE ANGLE INCLINED TO THE HORIZONTAL

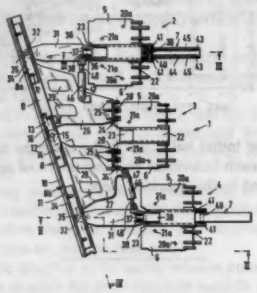
Kurt Plaga, Herne, Fed. Rep. of Germany, assignor to Bochumer Eisenhuette Heintzmann GmbH & Co., Bochum, Fed. Rep. of Germany

Filed Jan. 8, 1981, Ser. No. 223,295

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1980, 3001994

Int. Cl.³ E15D *23/04*

U.S. Cl. 405—291 10 Claims



1. A roof support for a mine gallery which extends at a relatively large angle inclined to the horizontal comprising an upper roof support unit, a middle roof support unit and a lower roof support unit arranged adjacent to each other and each having a pair of elongated sole engaging skids; an abutment beam extending inclined to the elongation of the skids and adapted to be located adjacent a face of the gallery to be mined; a pair of flat sole plates, each fixedly connected at one end edge thereof to the abutment beam and on the opposite end edge thereof to a respective one of the skids of said middle support unit tiltable about axes extending transverse to the elongation of said skids; said upper and said lower roof support unit including each elongated guide means with an advancing cylinder and piston unit provided therein and a flat end member connected at one end to said abutment beam for pivoting about a substantially vertical pivot axis; and a pair of directing cylinder and piston units, one of which being pivotally connected at opposite ends respectively to said flat end member of the guide means of said upper roof support unit and the flat sole plate of the middle roof support unit adjacent thereto and the other being pivotally connected at opposite ends respectively to the flat end member of the guide means of said lower roof support unit and the flat sole plate of said middle roof support unit adjacent thereto.

4,352,603

PNEUMATIC TUBE SYSTEM TELLER TERMINAL CONSTRUCTION

Walter G. Anders, Canton, Ohio, assignor to Diebold Incorporated, Canton, Ohio

Filed Aug. 15, 1980, Ser. No. 178,559

Int. Cl.³ B65G *51/26*

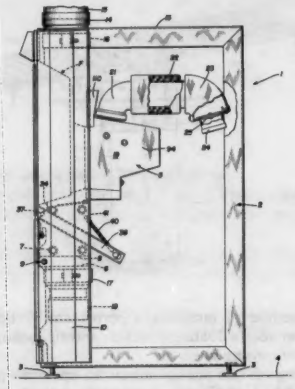
U.S. Cl. 406—27 22 Claims

16. In a terminal for a banking service pneumatic tube system of a type in which a single conveyor tube transmits a carrier to the terminal, in which the carrier is removable from the terminal, in which the terminal has a housing opening closed by a door pivotally mounted for movement between open and closed positions on the housing, in which a cradle for receiving a carrier transmitted in the system to the terminal is mounted on the door forming a cradle-door and is located in the housing when the door is closed; and in which the cradle-door is provided with latch means for locking the cradle-door closed when in closed position; the improvement in which the latch means includes:

(1) a pawl and a lever pivotally mounted at spaced positions on the cradle;

(2) the pawl and lever having selectively interengageengageable notch and stop projections;

(3) a latch member mounted on the terminal housing;



(4) the pawl and lever having two positions of interengagement, one of which is a latched mode and the other of which is an unlatched mode with respect to said latch member; and

(5) spring means engaged with each of the pawl and lever biasing the pawl and lever from one mode position to the other when either the pawl or lever is released from interengagement in the position of either of the modes.

4,352,604

FEEDING DEVICE FOR CIGARETTE FILTERS AND SIMILAR RODS

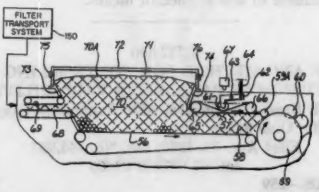
Walter Carancon; Derek H. Dyett, and Grantley R. Hoath, all of High Wycombe Bucks, England, assignors to Molins Limited, London, England

Filed Apr. 7, 1980, Ser. No. 137,970

Claims priority, application United Kingdom, Apr. 5, 1979, 7912043

Int. Cl.³ B65G *51/02, 37/00*

U.S. Cl. 406—28 7 Claims



1. In a cigarette filter attachment machine, means for feeding filter rods comprising a fluted drum for carrying filter rods in the flutes thereof; powered conveyor means arranged to feed a stack-like multi-layer stream of filter rods towards the fluted drum whereby movement of the conveyor means urges the filter rods towards the fluted drum to ensure that filter rods enter the flutes of the fluted drum, at least a part of said conveyor means being disposed at a level below the top of said fluted drum; means defining an expandable area for filter rods above the said part of said conveyor means disposed below the top of the fluted drum and including means upstream of said fluted drum for selectively supporting above the said expand-

able area a succession of filter-containing trays for feeding filter rods from the trays and onto the conveyor means; and pneumatic feed means for feeding pneumatically-delivered filter rods into the expandable area above the conveyor means adjacent to the end of the conveyor means remote from the fluted drum, whereby the volume of the filter rods expands in the expandable area when filter rods enter the expandable area from the feed means at a rate greater than that at which filter rods are conveyed from the expandable area by the conveyor means.

4,352,605

MEANS FOR ADDING MATERIALS TO A FLOWING STREAM

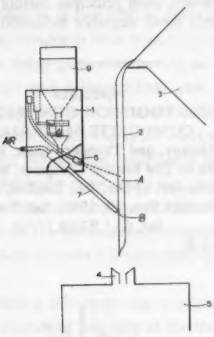
Ronald G. Godding, West Heath, and William McCormack, Studley, both of England, assignors to BCIRA, Birmingham, England

Filed Jun. 28, 1979, Ser. No. 52,740

Claims priority, application United Kingdom, Jun. 28, 1978, 28182/78

Int. Cl.³ B22D *27/20*; B65G *53/66*

U.S. Cl. 406—29 2 Claims



1. Apparatus for adding particulate material to a stream of flowing molten metal by blowing said material into said stream with a flow of gas under pressure, said apparatus comprising chamber means providing a path for the gas under pressure and directed towards a point in the path of said stream, reservoir means for said material, a flow path from said reservoir to said chamber means, a gate in said flow path, means for opening and shutting said gate, sensing means responsive to the presence and absence of said flowing metal stream at a predetermined location in the path of said stream, and a connection between said sensing means and said means for opening and shutting said gate whereby said gate is opened automatically in response to the presence at said location of said flowing metal stream and closed automatically in response to the absence at said location of said flowing metal stream, said connection between said sensing means and said gate opening and shutting means including adjustable delay means, the latter including first and second delay devices, said first device controlling the delay between sensing of the presence of said stream and the opening of said gate and said second device controlling the delay between sensing the absence of said stream and the closing of said gate, said devices being mutually independently adjustable.

4,352,606

DEVICE FOR EXTRACTING HAY FROM A TOWER SILO

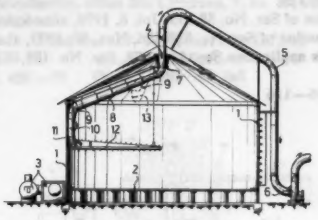
Bernhard Jülke, Melle, Fed. Rep. of Germany, assignor to Engelbrecht & Lemmerbrock GmbH & Co., Melle, Fed. Rep. of Germany

Filed Jun. 12, 1980, Ser. No. 158,718

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1979, 2924558

Int. Cl.³ B65G *53/44*

U.S. Cl. 406—81 9 Claims



1. In a device for extracting hay or the like from a cylindrical tower silo, the device being of the type comprising a pneumatic conveyor pipe leading centrally into said silo at its top end, and provided with an inlet thereat, and having a suction head for receiving material therein, and a radial belt or chain conveyor disposed in said silo, for feeding the material to said suction head of said conveyor pipe, the improvement comprising said conveyor pipe having a portion which extends radially with respect to the periphery of the silo, and is rotatable around the axis of the silo, said radial portion of said conveyor pipe having one extremity thereof following said top end inlet and the other extremity thereof being associated with said suction head, and said radial belt or chain conveyor revolves around the silo axis and feeds material to said suction head by conveying the material from the inside of the silo towards the outside thereof.

4,352,607

AUTOMATIC WAFER PROCESSING SYSTEM AND METHOD

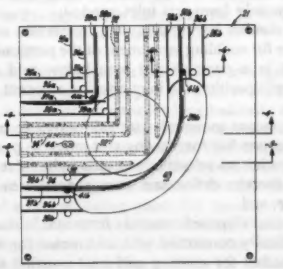
W. L. Loveless, Saratoga; Richard J. Trott, Los Gatos; Robert H. Heath, Campbell, and William L. Glick, San Jose, all of Calif., assignors to GCA Corporation, Sunnyvale, Calif.

Division of Ser. No. 779,074, Mar. 18, 1977, Pat. No. 4,278,366.

This application Dec. 11, 1980, Ser. No. 215,499

Int. Cl.³ B65G *51/02*

U.S. Cl. 406—88 3 Claims



1. A method of producing a variable width track assembly with a flat fluid bearing surface over which fragile articles are transported comprising the following steps: providing a plurality of parallel slot pairs in said flat surface; providing a pair of flexible strips; inserting only a portion of said pair of strips in a

slot pair corresponding to a predetermined track width to thereby form guides for said articles.

4,352,608

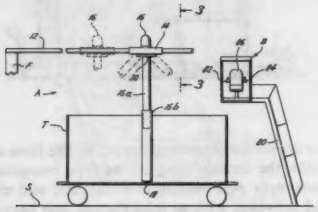
REMOTELY POSITIONED INTAKE APPARATUS FOR A PNEUMATIC CONVEYING SYSTEM AND METHOD OF USING SAME

Howard E. Stuller, and Jimmie L. Francis, both of Lubbock, Tex., assignors to Stuller Engineering & Marketing Services, Lubbock, Tex.

Continuation of Ser. No. 55,353, Jul. 6, 1979, abandoned, which is a continuation of Ser. No. 855,886, Nov. 30, 1977, abandoned. This application Sep. 17, 1980, Ser. No. 188,451

Int. Cl.³ B65G *53/40*

U.S. Cl. 406—116 **1 Claim**



1. An intake apparatus adapted for use with a pneumatic conveying system, including:

a support frame having a pair of spaced parallel rails adapted for positioning above a loading surface upon which the flowable material to be conveyed may be positioned;

a movable carriage movably mounted on said rails;

means with said carriage for effecting movement of said carriage on said frame rails;

means disposed remotely from said carriage and operably connected therewith for effecting desired movement of said carriage on said rails of said support frame;

an inlet conduit supported by said carriage and having an inlet opening disposed below said carriage and adjacent the loading surface for receiving the material to be conveyed;

hydraulic means for lengthening and shortening said inlet conduit below said carriage to position said inlet opening adjacent the material to be conveyed positioned on the loading surface;

control means disposed remotely from said inlet conduit and hydraulically connected with said inlet conduit for controlling the lengthening and shortening of said inlet conduit remotely from said inlet conduit;

said inlet conduit having a flexible connection adjacent said carriage for enabling movement of the portion of said inlet conduit in a cone shaped area below said carriage to selectively position the inlet opening adjacent the loading surface;

hydraulic means mounted with said movable carriage and said inlet conduit for moving said movable portion of said inlet conduit to selectively position the inlet opening in and to thereby define said cone shaped area below said carriage; and

control means disposed remotely from said inlet conduit and hydraulically connected with said means for moving said inlet conduit for moving said inlet opening of said inlet conduit remotely from said inlet conduit wherein said inlet conduit is remotely moved by movement of said means for moving said carriage and said inlet conduit in the cone shaped area to facilitate movement of the flowable material into the inlet conduit and pneumatic conveying system by selectively positioning the inlet opening over the loading surface.

4,352,609

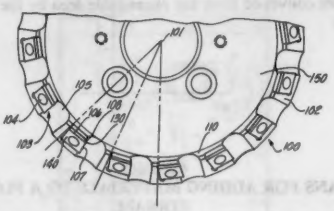
FACE MILLING CUTTER

David A. Hopkins, Troy, Mich., assignor to The Valeron Corporation, Troy, Mich.

Filed Aug. 28, 1980, Ser. No. 182,229

Int. Cl.³ B26D *1/12*

U.S. Cl. 407—42 **9 Claims**



1. A face milling cutter comprising an annular body rotatable about an axis thereof and including means for mounting and positioning in on-edge fashion a plurality of circumferentially spaced cutting inserts, such that each insert presents a principal cutting edge joined at its maximum cutting depth by a supplemental wiping edge lying substantially in the cutting plane of rotation, the intersection of the principal and supplemental edges forming a sharp corner with substantially no radius of curvature, each principal cutting edge positioned to exhibit relatively small negative inclination and positive true rake angles.

4,352,610

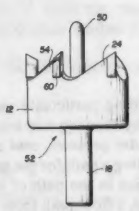
METHOD AND TOOL FOR GENERATING HOLES IN COMPOSITE MATERIALS

Alexander Yankovoy, and Theodore Ozer, both of Wallingford, Pa., assignors to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 166,868, Jul. 7, 1980. This application Sep. 30, 1980, Ser. No. 192,572

Int. Cl.³ B23B *51/04*

U.S. Cl. 408—1 R **16 Claims**



1. A trepanning tool, having an axis, for generating a hole in a composite of at least a first material and a second material having a higher modulus of elasticity than the first material, when the tool, relative to the composite, is rotated about its axis in a first direction of rotation and is moved in a first axial direction against the composite, the tool including a generally cylindrical side wall having a plurality of cutting teeth spaced around one end thereof, the plurality of cutting teeth including:

at least one outwardly directed cutting tooth having a front surface disposed in the first direction of rotation of the tool, a semi-cylindrical outer surface concentrically disposed about the tool axis, and an end surface, the front, outer and end surfaces of the outwardly-directed tooth intersecting at an outer cutting end point, the front surface intersecting the end surface adjacent the outer cutting end

point at an acute angle to form an outer end cutting edge, the front surface intersecting the outer surface adjacent the outer cutting end point at an angle not exceeding 90 degrees to form an outer circumference cutting edge, and the end surface intersecting the outer surface adjacent the outer cutting end point at an acute angle to form an outer trailing edge; and

at least one inwardly-directed cutting tooth, having a front surface disposed in the first direction of rotation of the tool, a semi-cylindrical inner surface concentrically disposed about the tool axis, and an end surface, wherein the front, inner, and end surfaces of the inwardly-directed tooth intersect at an inner cutting end point, the front surface intersecting the end surface adjacent the inner cutting end point at an acute angle to form an inner end cutting edge, the front surface intersecting the inner surface adjacent the inner cutting end point at an angle not exceeding 90 degrees to form an inner circumference cutting edge, and the end surface intersecting the inner surface adjacent the inner cutting end point at an acute angle to form an inner trailing edge.

14. A trepanning method of generating a hole in a composite of at least a first material and a second material having a higher modulus of elasticity than the first material, wherein an annular segment of the composite is removed to form and separate a generally cylindrical composite core from the main body of the composite, the hole being generated having an inner circumferential surface limit and a longitudinal axis, and the core being generated having an outer circumferential surface limit concentrically disposed within the inner circumferential surface limit of the hole, the method comprising the steps of:

cutting and continuously penetrating the composite at the inner circumferential surface limit of the hole and at an outer point which is simultaneously rotated in one direction about the hole axis and is longitudinally moved in one axial direction;

simultaneously cutting the composite continuously along a longitudinally extending first line at the inner circumferential surface of the hole being generated and along an outer portion of a first radius of the hole being generated which intersects the first line at the outer point at an acute angle, wherein the first line and the first radius is rotated and moved axially with the outer point to cut away an outer portion of the annular segment of the composite to be removed;

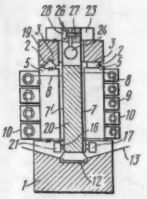
cutting and continuously penetrating the composite at the outer circumferential surface limit of the core and at an inner point which is rotated about the hole axis in the one direction of rotation and is simultaneously moved in the one axial direction with the outer point; and

simultaneously cutting the composite continuously along a longitudinally extending second line at the outer circumferential surface of the core and along an outer portion of a second radius of the hole being generated, wherein the inner end of the outer portion of the second radius intersects the second line at an acute angle at the inner point, the second line and second radius being moved with the inner point to cut away the remaining, inner portion of the annular composite segment.

4,352,611
DOUBLE-ENDED MULTIPLE-SPINDLE FINE BORING MACHINE

Genrikh M. Goldraikh, ulitsa Deribasovskaya, 9, kv. 10; Askold F. Dubinenko, ulitsa Kosmonavtov, 13a, kv. 8; Leonid V. Kapitelman, prospekt Dobrovolskogo, 147/1, kv. 33; Viktor A. Krivak, ulitsa 25 Chapaevskoi divizii, 3a, kv. 44; Viktor Y. Livshits, ulitsa Srednefontanskaya, 47/51, kv. 14; Konstantin M. Manenkov, ulitsa Kosmonavtov, 19/1, kv. 24; Semen M. Khomutov, Chernomorskaya doroga, 54b, kv. 29, and Eduard N. Khomchenko, ulitsa Ilfa i Petrova, 9, kv. 13, all of Odessa, U.S.S.R.

Filed Dec. 27, 1979, Ser. No. 107,912
Int. Cl.³ B23B *41/00*
U.S. Cl. 408—37 **9 Claims**



1. A double-ended multiple-spindle horizontal-feed fine boring machine comprising:

a bed having at least one guide with bearing faces thereon;

outer platens extending vertically;

a centre platen having a working face arranged in a vertical plane;

spindle heads mounted in a vertical row on said outer platens and serving for holding cutting tools therein, said spindle heads being arranged in such a manner that their axes are parallel to said working face of said centre platen;

a device for clamping workpieces, mounted on the working face of said centre platen;

said outer platens and said centre platen mounted on said bearing faces of said at least one guide, said centre platen being capable of horizontal movement between said outer platens and to effect the feed, each one of said bearing faces being disposed above the centre of gravity of each one of said platens mounted thereon.

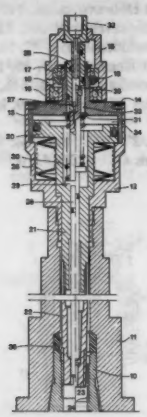
4,352,612
TOOL FASTENING DEVICE

Edmo Benatti, Frassine-Mantova, Italy, assignor to Sandvik-Kosta GmbH, Renningen, Fed. Rep. of Germany

Filed Jul. 8, 1980, Ser. No. 166,845
Claims priority, application Italy, Jul. 10, 1979, 18122 A/79
Int. Cl.³ B23C *5/26*
U.S. Cl. 409—233 **6 Claims**

1. Apparatus for clamping a tool holder to a spindle having a longitudinal bore, comprising: a drawbar movably mounted in said bore, a drawbar actuator for longitudinally moving said drawbar in reciprocable movement between an extended position for insertion and removal of the tool holder and a retracted position for securement of the tool holder comprising first spring means biasing said drawbar toward said retracted position, and a first actuating piston for moving said drawbar toward its extended position against the bias of said first spring means, locking means carried by said drawbar which are radially movable between a locking position for lockingly engaging the tool holder and an unlocking position for releasing the tool holder, and lock moving means for radially moving said locking means, a lock actuator comprising second spring means for biasing said lock moving means to move said locking means toward said locking position, and a second actuating piston for moving said lock moving means to move said locking means toward said unlocking position against the bias of

said second spring means, wherein said first and second pistons each have a surface exposed to a common work chamber to which pressurized fluid is supplied, the relationship between the exposed surface areas of said first and second pistons and



the biasing strengths of said first and second spring means being such that said first piston is actuated by a fluid pressure in said common work chamber which is lower than that at which said second piston is actuated.

4,352,613

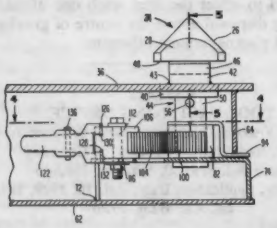
GEAR OPERATED TWIST LOCK

William A. Bertolini, 115-65 Undercliff Ter., Kinnelon, N.J. 07405

Continuation-in-part of Ser. No. 205,590, Nov. 10, 1980. This application Dec. 5, 1980, Ser. No. 213,836

Int. Cl.³ B60P *7/013*

U.S. Cl. 410—82 **10 Claims**



1. In a chassis for mounting a container and including front and rear bolsters having top, side and end walls; a twist lock adjacent the end of each bolster comprising a shank with a locking head thereon, said shank extending vertically through said top bolster wall and mounted for axial rotation thereon, a first gear quadrant, means mounting said first gear quadrant on said shank within said bolster for rotation with said shank, a second gear quadrant meshing with said first gear quadrant, means mounting said second gear quadrant within said bolster for rotation about an axis parallel to said shank axis, a handle extending from said means mounting said second gear quadrant whereby movement of the handle in one direction toward one of said bolster side walls will twist said shank and head 90° to its locked position and movement of the handle in an opposite direction will twist said shank and head 90° back to its unlocked position, and a releasable latch to selectively latch said second gear quadrant against rotation and to unlatch it to permit its rotation by said handle, said gear quadrants, handle and latch being confined between said sidewalls in both the locked and unlocked positions.

4,352,614

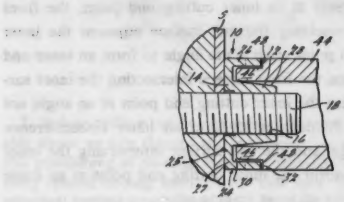
TAMPER RESISTANT THREADED FASTENER

Herbert L. Hirsch, Yorba Linda, Calif., assignor to Microdot Inc., Darien, Conn.

Filed Jul. 23, 1980, Ser. No. 171,367

Int. Cl.³ F16B *37/00, 23/00*

U.S. Cl. 411—427 **1 Claim**



1. A system for effecting a generally tamper resistant threaded connection,

said system comprising a nut having an internally threaded cylindrical shank and a radial flange extending substantially perpendicular to the longitudinal axis of the shank adjacent one end thereof, the flange on said nut having an integrally reentrantly formed axially extending hollow cylindrical tool engaging portion disposed at its radially outer periphery in radially spaced relation to the shank portions of said nut, said tool engaging portion having an axially facing annular edge face through which a torque may be applied to said nut,

a driving tool having a circular central recess complementary to the cylindrical shank on said nut for the acceptance thereof in guiding relationship, and

engagement means between said driving tool and the tool engaging portion of said nut for applying a torque to said nut through the tool engaging portion thereof when said driving tool is rotated in one direction, but which enables relative rotational movement between said driving tool and the tool engaging portion of said nut when said driving tool is rotated in the opposite direction,

said engagement means comprising a plurality of spaced recesses on the edge face of the tool engaging portion of said nut,

each recess having a drive surface and a slip surface, and

a like number of generally complementary shaped projections on said driving tool which are receivable within said recesses and which coact with the drive surface of each recess to establish said operative connection upon rotation of said driving tool in said one direction and with said slip surface of each recess to permit relative rotation between said driving tool and said nut upon rotation of said driving tool in the opposite direction,

the slip surface of each recess effecting axial movement of said driving tool away from the tool engaging portion of said nut and withdrawal of the projections thereon from said recesses upon rotation of said driving tool in said opposite direction,

the shank on said nut guiding said tool upon relative rotation and axial with drawal movement of said tool from said nut until the projections on said tool are completely disengaged from the drive surfaces of said recesses to preclude radial displacement of said tool relative to said nut prior to driving disengagement therebetween.

4,352,615
FEEDER FOR AUTOMATIC LATHE

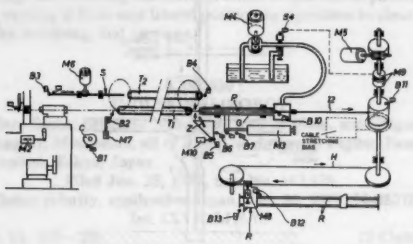
Walter Neukomm, Court, Switzerland, assignor to LNS SA, Orvin, Switzerland

Continuation of Ser. No. 39,549, May 16, 1979, abandoned. This application Apr. 13, 1981, Ser. No. 254,014

Claims priority, application Switzerland, May 19, 1978, 5485/78

Int. Cl.³ B23B *13/00, 15/00*

U.S. Cl. 414—17 14 Claims



1. Bar stock feed apparatus for an automatic lathe having a headstock with a chuck, said feed apparatus comprising:

at least one tube having a front end and a rear end and arranged to be disposed in use in alignment with said headstock for guiding a piece of bar stock engaged in said headstock with the front end of said tube near said headstock and the rear end of said tube remote from said headstock;

a housing having a front part and a rear part, the front part of the housing being tubular and being disposed in alignment with said tube and having a first end near the rear end of said tube;

a plunger disposed as a piston in said housing and having a front end and a rear end and adapted to be advanced from the housing so that the front end of the plunger enters said tube and pushes said piece of bar stock toward said headstock, and then to be retracted from said tube, so as to extract a remaining stub of said bar out from the headstock and to pull it backwards within the tube for removing it from said tube through the rear end thereof;

a hydraulic system connectable to the rear part of the housing for delivering fluid under pressure into the housing in order to exert on the plunger a hydraulic force to bring about advancing movement of the plunger;

a non extensible flexible member having first and second ends and having its first end attached to the rear end of the plunger;

a first pulling device connected to said second end of said flexible member for acting thereupon with a first pulling force for maintaining said flexible member stretched during advancing movement of said plunger;

a second pulling device connectable to said second end of said flexible member for acting thereon with a second, larger, pulling force for bringing about retracting movement of said plunger; and

means for operatively connecting the second pulling device to the second end of said flexible member when the plunger is to be retracted.

4,352,616
DEVICE FOR ARRANGING OBJECTS IN STACKING LAYERS, FOR LOADING PALLETS

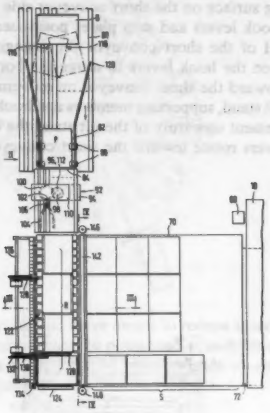
Hermann Brenner, Kunzelsau-Kocherstetten, Fed. Rep. of Germany, assignor to Grossbuchbinderei Sigloch GmbH & Co. KG, Kunzelsau, Fed. Rep. of Germany

Filed Mar. 6, 1980, Ser. No. 127,647

Claims priority, application Fed. Rep. of Germany, Dec. 28, 1979, 2952624

Int. Cl.³ B65G *57/26*

U.S. Cl. 414—31 21 Claims



1. A process for the mechanical grouping of objects such as books or the like to be stacked into stacking tiers for loading on pallets comprising forming stacks of equal height from individual objects which are supplied flat and with like orientation, conveying a plurality of said stacks along an accumulation stretch for forming a stacking row the length of which corresponds to the transverse dimension of a pallet, rotating at least one of said stacks in said stacking row by 90° with respect to the other stacks in said stacking row during the conveying of the individual stacks, and producing a gap between said at least one of said stacks and the remainder of said stacks in said stacking row, pushing said stacking row onto an intermediate storage table in a direction transverse to its row direction, and completing a first stacking tier having the dimensions of the pallet on the intermediate storage table from a plurality of sequentially arriving of said stacking rows which are pushed on after the first, transferring the thus formed stacking tier from the intermediate storage table to a pallet, and rotating the stacks in succeeding stacking tiers in a different sequence relative to the preceding stacking tier whereby the stacks in succeeding stacking tiers deposited on the pallet are at least partially staggered or overlapping in a bond.

4,352,617
BUCKET STACKING AND CONVEYING APPARATUS

Masao Sakai, Inuyamashi, and Takayuki Nishida, Kyotoshi, both of Japan, assignors to Murata Kikai Kabushiki Kaisha, Japan

Filed Apr. 10, 1980, Ser. No. 138,876

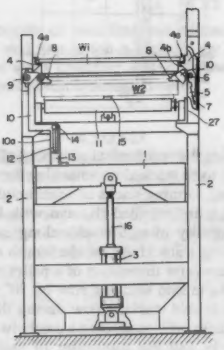
Claims priority, application Japan, Apr. 12, 1979, 54-45048; Apr. 24, 1979, 54-50983

Int. Cl.³ B65G *57/30*

U.S. Cl. 414—95 5 Claims

1. An apparatus for stacking conveyed objects comprising a short conveyor arranged between a carrying conveyor and a delivering conveyor for receiving objects to be stacked from the carrying conveyor stanchions positioned on both sides of the short conveyor, a lift stand arranged under the short con-

veyor movable in a vertical direction along the stanchions supporting members secured to the lift stand for movement along the stanchions in a vertical direction together with the lift stand, shafts extending parallel to the short conveyor secured to the supporting members, hook levers having upper and lower ends extending generally vertically in the direction of the stanchions pivoted centrally of the levers on the shafts for rotation about the sahfts, spring means secured to the lower ends of the hook levers away from the short conveyor and the upper end of the hook levers toward the short conveyor, an object engaging notch in the upper end of the hook levers, a camming surface on the short conveyor side of the upper end of the hook levers and stop plates positioned substantially at the level of the short conveyor for engaging the camming surface on the hook levers to move the bottom of the hook levers toward the short conveyor on movement downwardly of the lift stand, supporting members and hook levers, whereby on movement upwardly of the lift stand the upper part of the hook levers rotate toward the short conveyor on disengagement of the cam surface from the stop plates to engage an object positioned on the short conveyor in the hook lever object engaging notches to lift the object above the short conveyor and on downward movement of the lift stand the lower ends of the hook levers are again moved toward the short conveyor by the stop plates to disengage the hook levers from objects positioned on the short conveyor, a stop lever pivotally mounted on one of the stanchions adjacent the short conveyor for pivotal movement into an out of the path of an object positioned on the short conveyor and an actuating link pivotally secured to the lever and carried by the lift stand for vertical movement therewith to pivot the stop lever into the path of an object on the short conveyor on movement of the lift stand vertically upwardly and to pivot the stop lever out of the path of a bucket moving on the short conveyor on movement of the lift stand vertically downwardly, including a lost motion connection between the actuating link and lift stand whereby actuation of the stop lever is accomplished during the last portion of movement of the lift stand in either direction.



4,352,618

METHOD OF, AND APPARATUS FOR PREVENTING THE UNINTENDED CHARGING OF COKE OVEN CHAMBERS

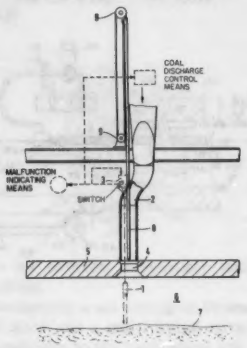
Claus Flockenhaus; Horst Joseph, both of Essen, and Joachim Meckel, Heiligenhaus, all of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH and Didier Engineering GmbH, both of Essen, Fed. Rep. of Germany

Filed Apr. 30, 1980, Ser. No. 145,766

Claims priority, application Fed. Rep. of Germany, May 5, 1979, 2918151

Int. Cl.³ C10B *31/04*

U.S. Cl. 414—148 **12 Claims**



11. Apparatus for preventing unintentional charging of coal from a coal supply device through a charge pipe and a charge hole in the ceiling of a plurality of coke ovens, the apparatus comprising means for lowering a single one of obstruction sensors through the charge hole of and into a respective one of the coke ovens; means for lowering a filling level indicating probe into a respective one of the coke ovens in the event the sensor fails to encounter an obstacle during its descent; and means for blocking the initiation of a coal charging operation for the respective coke oven in the event the descending sensor encounters an obstruction in this respective coke oven.

4,352,619

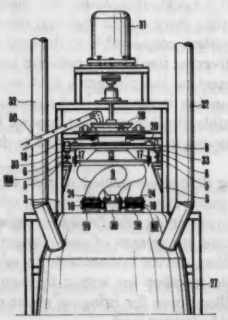
BLAST FURNACE INSTALLATIONS

Kiyotoshi Sakai, 4-402 Tsuchitori 5-chome, Tobata-ku, Kita-Kyushu City, Fukuoka Prefecture, Japan

Filed Aug. 26, 1980, Ser. No. 181,356

Int. Cl.³ F27B *1/20*

U.S. Cl. 414—174 **4 Claims**



1. In a blast furnace, installation of the type comprising a blast furnace and raw material charging apparatus including a

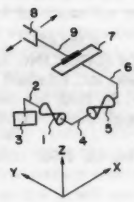
hollow inverted frustum shaped rotary hopper supplied with raw material, an impeller located beneath said hopper for receiving the raw material therefrom, and inclined chute means surrounding the impeller and connected to the blast furnace for receiving the raw material discharged from the impeller to supply the raw material to the interior of said blast furnace, the improvement comprising means defining a support independent of the furnace, a first carriage mounted on the support for movement from a position above the furnace to a lateral position, tackle adjustably suspending the inclined chute from the carriage clear of the furnace such as to bear the weight of the inclined chute and to enable moving the inclined chute to a lateral position by lateral movement of the first carriage for dismantling the inclined chute from the furnace and a second carriage mounted on the support below the first carriage for receiving the inclined chute at said lateral position and moving it from said lateral position to a position to clear it of the overlying first carriage.

4,352,620

INDUSTRIAL ROBOT

Hajimu Inaba; Seiichiro Nakajima, both of Hino, and Shigemi Inagaki, Musashino, all of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Jun. 25, 1980, Ser. No. 162,878
Claims priority, application Japan, Jun. 30, 1979, 54-082782
Int. Cl.³ B25J *3/00*
U.S. Cl. 414—225 **22 Claims**



1. An industrial robot which comprises:
a first rotation drive mechanism;
an arm rotatably supported by said first rotation drive mechanism; and
a second rotation drive mechanism supported by said arm so that the attitude of said second rotation drive mechanism is changed by rotation of said first rotation drive mechanism, the axis of rotation of said second rotation drive mechanism being disposed substantially perpendicular to the axis of rotation of said first rotation drive mechanism.

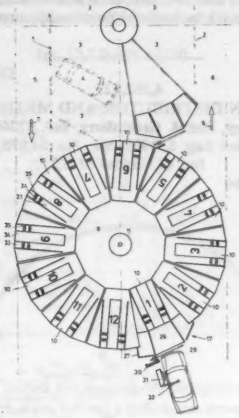
4,352,621

APPARATUS FOR PARKING MOTOR VEHICLES

Ernst E. Kühner, 8 Fere-Champenoise-Strasse, D-7501 Bruchausen, and Dieter G. Weinstein, Waldbronn, both of Fed. Rep. of Germany, assignors to Ernest E. Kühner, Bruchhausen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 883,153, Mar. 3, 1978, abandoned. This application Nov. 6, 1980, Ser. No. 204,516
Claims priority, application Fed. Rep. of Germany, Mar. 3, 1977, 2709202
Int. Cl.³ E04H *6/40*
U.S. Cl. 414—231 **12 Claims**

8. In an apparatus for parking motor vehicles on pallets, the pallets being arranged next to one another on a movable supporting construction, the movable supporting construction being rotatable about a central column by a drive means such that the supporting construction can be positioned at a desired position in its path of movement, including a rotary rim connected to the supporting construction, said rotary rim being provided with a plurality of teeth, a transmission means including a pinion adapted to mesh with the teeth of the rotary rim, an increment transmitter driven by the supporting construction through said transmission means for supplying actual value signals representative of an actual position of the supporting construction, the improvement comprising:



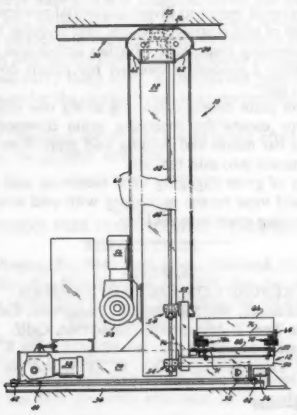
first means to control said drive means to reduce speed thereof when a selected pallet to be positioned at said desired position assumes a predetermined position prior to arriving at said desired position.

4,352,622

WAREHOUSE CRANE WITH PIN-ENGAGEABLE TOTE PANS

John E. Wieschel, Hartland, Wis., assignor to Harnischfeger Corporation, Milwaukee, Wis.

Filed Dec. 23, 1980, Ser. No. 219,446
Int. Cl.³ B65G *47/00*
U.S. Cl. 414—277 **6 Claims**



1. In a warehouse crane having individual storage areas for containing tote pans, said tote pans having opposite end walls, each with a handle, a pair of reversibly driven, counterrotating endless chains mounted on said crane and for movement about a generally horizontal, orbital path, each of said chains also having a radially inner pin and an outer pin attached to and for movement with their respective chain in orbital paths, said inner pin being pushingly engageable with said handles to push

said pans into said storage areas, and said outer pin being releasably engageable with said handle of said pans to pull and push said pans from said storage area, said inner pin being attached to said chain with a first arm and said outer pin is attached to said chain with a second arm, said second arm being longer than said first arm, both said first and said second arm having its pin-attached end positioned outwardly of said chain path.

4,352,623

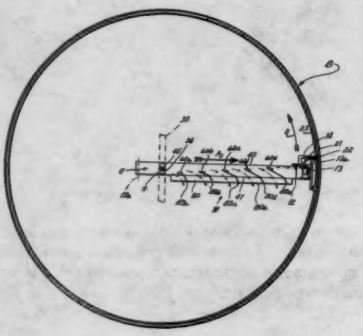
GRAIN DISTRIBUTOR AND METHOD

George W. Smiley, Rte. 4, Greensburg, Ind. 47240

Filed Aug. 8, 1979, Ser. No. 64,875

Int. Cl.³ B65G *65/32*

U.S. Cl. 414—294 27 Claims



16. Apparatus for dropping grain into a bin to fill said bin evenly, said apparatus comprising:

a conveyor means for moving grain thereon radially with respect to said bin between a central area of said bin and a periphery thereof, and being rotationally mounted for sweeping around said bin in a horizontal circular plane,

a plurality of sweeper bar means extending at an angle across said conveyor means to divert sequential portions of grain off a side of said conveyor means, said sweeper bar means each extending respectively further across said conveyor means than a preceding sweeper bar means downstream thereof, and

a transition plate means extending along one edge of said conveyor means for receiving grain directed by said sweeper bar means and guiding said grain from said conveyor means into said bin, and

a plurality of grain engaging vane means on said transition plate, said vane means in register with said sweeper bars for directing grain into said bin.

4,352,624

REFUSE COMPACTION TRAILER

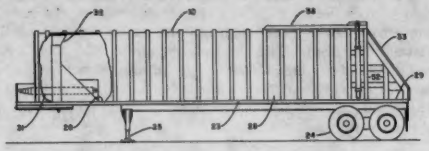
Tom T. Matsumoto, 889 Spinosa Dr., Sunnyvale, Calif. 94087, assignor to Tom T. Matsumoto, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 903,426, May 8, 1979, abandoned. This application Dec. 17, 1979, Ser. No. 104,138

Int. Cl.³ B65G *67/04, 67/24*

U.S. Cl. 414—400 3 Claims

1. A refuse transport vehicle capable of use with a stationary refuse compactor of the type that has a refuse chamber supported above a horizontal surface, a loading hopper above the chamber and communicating therewith for affording introduction of refuse into the chamber, said chamber having a horizontal extension terminating in a discharge opening, and a packing head for reciprocal movement within the chamber to move refuse horizontally therein through the discharge opening, said vehicle comprising a floor, first and second side walls and a top wall forming a closed body having a rearward opening of general rectangular cross-sectional shape and sized to receive said chamber extension therein, said floor and said top wall having rear extremities, the rear extremity of the floor being rearward of the rear extremity of the top wall by a given distance and said side walls having sloped edge portions extending between the rear portions of said floor and top wall so that said vehicle can be moved on said horizontal surface beneath said discharge opening with the vehicle body surrounding said extension, with the rear extremity of the floor



rearward of the discharge opening and with the rear extremity of said top wall free of said loading hopper, first and second guide tracks having portions mounted to the sloped edge portions of respective said side walls in confronting relation across said rearward opening, a door spanning the space between said tracks and slidably supported therein for closing said rearward opening, said guide tracks having portions remote from said rearward opening and attached to the exterior of said body for affording movement of said door clear of said rearward opening and in non-obstructing relation to said loading hopper.

4,352,625

CONTAINER HANDLING APPARATUS

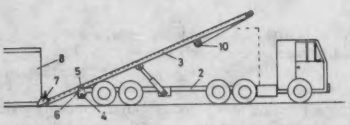
Jack Bolderoff, 18 Hooke Rd., Elizabeth West, Australia (5112)

Filed Apr. 22, 1980, Ser. No. 142,761

Claims priority, application Australia, Apr. 23, 1979, PD85006

Int. Cl.³ B60P *1/00*

U.S. Cl. 414—494 4 Claims



1. In a system for handling sea containers to secure such a container in a loaded position on a vehicle, a tiltable support frame on the vehicle adapted to support a sea container having a forward and rearward end, said support frame in its tilted position having one of its ends adjacent the surface on which the vehicle rests, and means for moving the container along said support frame, the improvement characterized by a cross member movable along said support frame and having means to lock onto the sea container, said means for moving the container being attached to said cross member whereby said container may be drawn along said support frame by and during movement of said cross member, said cross member including stop and locating pins fixedly mounted thereon to engage openings in the forward end of the base of the container and also including a set of forward locking pins on locking plates pivotally mounted on the cross member to be engageable with apertures at the sides of the base of the container at the forward portion thereof, actuating means being provided to pivot the plates toward and away from each other to engage the second-named pins in said apertures in the sides of the base of the container, and a set of rearward locking pins engageable with apertures at the rear of the container base to secure the container in the loaded position, each pin in the rearward set being supported by a movable carriage, and means for moving

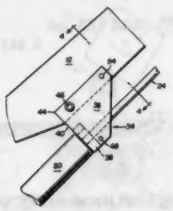
the carriages toward and away from the container to engage and disengage the pins.

4,352,626

LOADER ARM POSITIONING DEVICE

Claude M. Frisbee, Bettendorf, and David H. Seaberg, Davenport, both of Iowa, assignors to J. I. Case Company, Racine, Wis.

Filed Dec. 22, 1980, Ser. No. 219,077
Int. Cl.³ B66C *23/00*
U.S. Cl. 414—722 1 Claim



1. In a tractor carrying a front end mounted bucket assembly including boom arms which are pivotally secured to the tractor on opposite sides of its frame for swinging movement parallel to a longitudinal vertical plane and corresponding lift cylinders disposed directly beneath the boom arms for raising and lowering the boom arms, each lift cylinder including an end portion and a piston rod connected to its corresponding boom arm, the improvement comprising:

a locking device pivotally connected to one of said boom arms and said locking device being selectively movable between an inoperative position where the locking device is out of the way so that it will not interfere with the normal operation of the boom arm and an operative position between the boom arm and the corresponding lift cylinder for the boom arm where the locking device is restrained in compression to secure the boom arm and lift cylinder in a raised position against collapsing movement;

said locking device including a pair of spaced apart, parallel, and aligned mounting plates, each mounting plate being generally in the form of a right triangle, a generally U-shaped yoke fixed between said mounting plates and extending along opposed corresponding sides of the mounting plates for a part of their length, said yoke including an open portion that extends outwardly away from the right angle corners of the mounting plates, and said mounting plates being pivotally attached to opposite sides of said boom arm;

a lock pin passing through a first set of opposed openings in said mounting plates and a latch opening through said boom arm for holding said locking device in its inoperative position where one side of said yoke is held in a substantially abutting relationship with the underside of said boom arm and the side surfaces of said mounting plates being held in alignment with opposite sides of said boom arm which is sandwiched therebetween; and

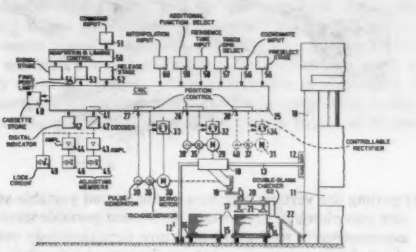
said lock pin being selectively removed and reinserted through a second set of opposed openings through said mounting plates and said boom arm latch opening such that said locking device assumes its operative position whereby said yoke abuts the end portion of said lift cylinder and straddles the lift cylinder piston rod thereby providing a rigid strut between the lift cylinder and boom arm to support the boom arm in a raised position against collapsing movement.

4,352,627

LOADING DEVICE FOR A PRESS

Franz Schneider, Göppingen, and Rolf Rühl, Rechberghausen, both of Fed. Rep. of Germany, assignors to L. Schuler GmbH, Göppingen, Fed. Rep. of Germany

Filed Jan. 4, 1979, Ser. No. 981
Claims priority, application Fed. Rep. of Germany, Jan. 5, 1978, 2800381
Int. Cl.³ B30B *15/30*
U.S. Cl. 414—752 13 Claims



1. A loading device for loading blanks from a stack into a tool chamber of a press having a main press drive, comprising:

a guide frame located adjacent the press and extending over the stack of blanks;

a carrier mounted on said guide frame;

a support mounted on a guide element of said carrier;

a first numerically controlled drive means to move the carrier along said guide frame in a first direction;

a second numerically controlled drive means to move the support in the guide element in a second direction perpendicular to the first direction;

gripper elements, wherein said gripper elements can be moved laterally outside of an area under said carrier frame into the tool chamber of the press to lift workpieces from the stack and deliver them into said press working area;

a plurality of adjustable drive means controlled by a numerical control únit which is independent of the press drive means, said adjustable drive means being coupled to the gripper elements to move the gripper elements in either of said first and second directions to remove blanks from the stack and carry them along a preselected path outside of the area under the carrier frame and into the tool chamber; and

means for checking for double blanks being lifted from the stack by the gripper elements.

4,352,628

METHOD FOR POSITIONING PORTABLE STRUCTURES

William J. Rogers, Jr., 4449 Park Blvd., Oakland, Calif. 94602

Division of Ser. No. 840,752, Oct. 11, 1977, Pat. No. 4,200,419.
This application Nov. 15, 1979, Ser. No. 94,468
Int. Cl.³ B66F *7/12*
U.S. Cl. 414—786 2 Claims

1. A method of positioning two portable structures in a side by side contiguous relationship comprising the steps of:

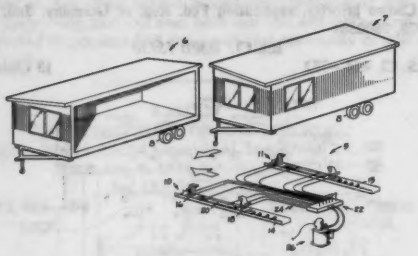
(1) moving the first portable structure to a predetermined position

(2) leveling the first portable structure

(3) putting the vertical members of the first portable structure into plumb by supporting the first portable structure asymmetrically so that the structure simultaneously rotates about the longitudinal and about the lateral axis while concurrently observing the plumb of the vertical members of the first portable structure

(4) moving the second portable structure along its longitudinal axis to a position adjacent the first portable structure

(5) moving the second portable structure laterally to a position contiguous the first portable structure
(6) leveling the second portable structure
(7) moving the plane of the floor of the second portable structure into the plane of the floor of the first portable structure



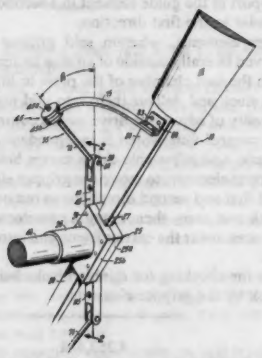
(8) putting the vertical members of the second portable structure into plumb by supporting the second portable structure asymmetrically so that the structure simultaneously rotates about the longitudinal and about the lateral axis while concurrently observing the plumb of the vertical members of the second portable structure.

4,352,629

WIND TURBINE

Marvin C. Cheney, Jr., Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Oct. 19, 1981, Ser. No. 312,604
Int. Cl.³ F03D 7/04
U.S. Cl. 416—18 **9 Claims**



1. In a wind turbine comprising a rotatable hub, at least one torsionally flexible beam including portions extending outwardly of said hub for rotation therewith, an airfoil blade fixed to each said outwardly extending beam portion for rotation therewith and a governor connected to each said beam portion, said governor being responsive to rotor speed by movement along a predetermined path for torsionally twisting said beam portion, thereby adjusting the pitch of said blade from a position corresponding to low pitch at static or negligible wind velocity conditions for turbine self-starting to a position of increased pitch for increasing the speed of rotation of said wind turbine with increasing wind speed, the improvement characterized by:

means carried by said hub and engaging said governor thereby limiting the movement thereof for restricting continued pitch change of said blade at a predetermined turbine operating speed due to torsional creep of that flexible beam to which said blade is fixed, and being released from said governor for allowing continued torsional twisting of said beam to orient said blade in a stall position at excessive turbine speeds for preventing further overspeed operation of said wind turbine.

4,352,630

HAND FAN ASSEMBLY AND KIT

William H. Wallo, Clearwater, Fla., assignor to Francis & Lusky Company, Inc., Nashville, Tenn.

Filed May 1, 1980, Ser. No. 145,718
Int. Cl.³ A45B 27/00; B65D 27/00; A63H 9/00
U.S. Cl. 416—70 A **25 Claims**

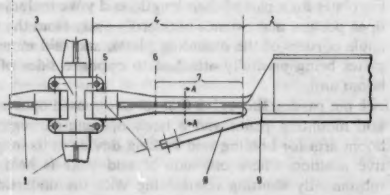
1. A method of making hand fan assembly, comprising:
forming a fan body with an elongate handle socket extending inwardly from one edge of said body;
providing an elongate handle with a hand grip portion and an extension stem projecting from said hand grip portion and adapted to be received in said socket;
providing means for retaining said stem in said socket and thus maintaining said handle in functional assembly with said fan body;
forming said body from a pair of laminar panels;
and preforming matching offsets in said panel defining said socket in the laminar relation of said panels.

4,352,631

HINGELESS ROTOR, ESPECIALLY FOR A HELICOPTER

Wolfgang Buchs, Valley; Franz Nowak, Taufkirchen, and Rudolf Woerndle, Brunnthal, all of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm GmbH, Munich, Fed. Rep. of Germany

Filed Apr. 17, 1980, Ser. No. 141,281
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1979, 2917301
Int. Cl.³ B64C 27/38
U.S. Cl. 416—134 A **18 Claims**



1. A connecting element (4) for securing a rotor blade (2) to a rotor hub (3) without hinging means, especially for a helicopter, comprising a torsion hinge zone (7) including at least two components (10, 11, 12, 13) connected to each other so that the components include an angle and form a common shearing axis (14), said components of said torsion hinge zone (7) being so dimensioned in their respective cross-section that at least one component extends with two sides outside of the other component whereby the other component is substantially enclosed and contacted by said one component, and slot means (15, 16) extending longitudinally through the connecting element at

least in one of said two components, said slot means extending substantially radially toward said central shearing axis (14), whereby each connecting element functions as a flapping hinge (5), as a lead-lag hinge (6), and as a torsion hinge (7).

4,352,632

ROTOR MOUNTING ASSEMBLY FOR ROTARY WING AIRCRAFT

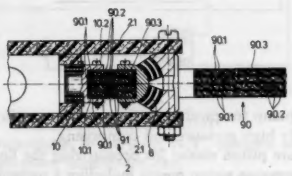
Alois Schwarz, Putzbrunn; Karlheinz Mautz, and Alexander Schröder, both of Ottobrunn, all of Fed. Rep. of Germany, assignors to Messerschmitt-Bölkow-Blohm Gesellschaft mit beschränkter Haftung, Munich, Fed. Rep. of Germany

Filed Feb. 4, 1981, Ser. No. 231,042

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1980, 3006088

Int. Cl.³ B64C 27/38

U.S. Cl. 416—134 A 5 Claims



1. In a rotor head mounting assembly for the rotor of rotary wing aircraft having rotor blades each including a blade root pivotally supported at a rotor head by blade angle bearings, said rotor head being formed as an integral body of composite fiber material shaped to define a plurality of bifurcated rotor blade mounting support arms each having a rotor blade mounted therebetween, said rotor head being essentially composed of generally congruent plate members with intermediate spacer means located therebetween, said plate members and said spacer means being integrally joined together to form said rotor head as a unitary body of composite fiber material, each of said mounting support arms being equipped with load-bearing connection means for mounting between the sides of each of said bifurcated support arms a rotor blade root, said connection means being formed to enable bearing of compressive stresses in the longitudinal direction of a rotor blade while allowing angular movement of said blade, the improvement comprising that said rotor blades are formed at least in the region of said blade roots with a laminated configuration of composite fiber material, that at least two layers of said laminated configuration are formed with a fiber loop having a unidirectional fiber orientation which extends longitudinally of said rotor blade and about said load-bearing connection means and about its support point at the side of said blade root, that an intermediate layer having a crosswise fiber orientation is provided between each of said at least two layers which integrally joins said two layers, and that said fiber loop is enclosed by support members at its longitudinal edges at the inside and outside thereof at least in the region of said load-bearing connection means.

4,352,633

WINDMILL BLADE STALLING AND SPEED CONTROL DEVICE

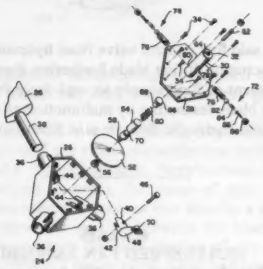
Devon E. Tassen, 10335 Old 44 Dr., Millville, Calif. 96062

Filed Apr. 25, 1980, Ser. No. 143,728

Int. Cl.³ F03D 7/02, 7/04

U.S. Cl. 416—137 6 Claims

1. In combination with a windmill hub which is rotatable about an axis of rotation and supports the blades of a windmill, said hub including a casing, blade support means mounted upon the casing to receive and support a shaft for at least one windmill blade for rotational movement relative to said support means to alter the pitch of the windmill blade associated therewith, a windmill blade stalling and speed control device comprising pitch biasing means mounted upon said casing to oppose centrifugal force induced relative movement in at least one direction between said shaft and blade support means, said pitch biasing means including shaft movement responsive means which moves in response to centrifugal force induced relative movement between said shaft and blade support means, said shaft movement responsive means including a stub shaft movable longitudinally away from said hub against said pitch biasing means as the centrifugal force increases, and stage adjustment means mounted upon said casing for aiding said biasing means and increasing the opposition to said relative movement between said shaft and blade support means when said windmill hub and the blades supported thereby reach an entry speed of rotation within at least one of a plurality of sequential predetermined rotational speed ranges and to automatically cease to aid said opposition when the speed of rotation of said windmill hub and the blades supported thereby exceeds the last of the sequential predetermined rotational speed ranges, said stage adjustment means including at least one detent formed in the surface of said stub shaft intermediate its ends and biased bearing means mounted on said casing for engaging said detent when said stub shaft moves longitudinally to bring said detent into alignment with said bearing means, said bearing means including at least first and second detent assemblies spaced longitudinally along said stub shaft, each said detent assembly including a bearing member for engaging said detent, detent biasing means for biasing said bearing member toward said stub shaft and adjustment means for adjusting the bias of said detent biasing means, whereby said longitudinally spaced bearing members sequentially engage said detent as said stub shaft moves longitudinally to provide at least two separate impediments to longitudinal movement of said stub shaft and, thereby, to increase opposition to relative movement between said shaft and blade support means.



4,352,634

WIND TURBINE BLADE PITCH CONTROL SYSTEM

Merritt B. Andrews, Westfield, Mass., assignor to United Technologies Corporation, Hartford, Conn.

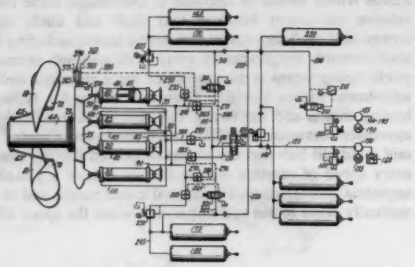
Filed Mar. 17, 1980, Ser. No. 130,657

Int. Cl.³ F03D 7/04

U.S. Cl. 416—154 13 Claims

1. A system for controlling the pitch of wind turbine blades, said system comprising a first source of pressurized hydraulic fluid; an hydraulic actuator connected to, and driving said blades in pivoting movement about the longitudinal axes thereof in response to the introduction of pressurized hydraulic fluid into said actuator for adjusting blade pitch; a first control valve for controlling the introduction of said pressurized hydraulic fluid to said actuator for normal blade pitch adjustment; at least one second source of pressurized hydraulic fluid independent of said first source thereof and supplied to said actuator for feathering said blades, and second control valve means communicating with said first and second hydraulic

fluid sources for controlling the introduction of said hydraulic fluid from said second source to said actuator while maintaining isolation of said second fluid source from said first fluid source and said first control valve and for isolating said first



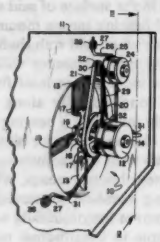
source and said first control valve from hydraulic fluid drained from said actuator during blade feathering thereby preventing the impediment of fluid supply to, and drain from, said actuators during blade feathering by malfunction of said first source of pressurized hydraulic fluid or said first control means.

4,352,635

MULTI-SPEED FAN ASSEMBLY

James F. Saunders, Onalaska, Wis., assignor to The Trane Company, La Crosse, Wis.

Filed Jul. 16, 1980, Ser. No. 169,333
Int. Cl.³ F04B *49/02, 35/04;* H02D *1/58*
U.S. Cl. 417—16 **9 Claims**



1. A multi-speed fluid impeller apparatus for use in moving air in a system having two or more stages of operation, said apparatus comprising

a. a rotating fluid impeller;

b. a shaft centrally connected to the fluid impeller;

c. a first electric motor, having a rotor attached to the shaft for drivingly rotating the impeller;

d. a second electric motor, having a rotor drivingly connected to the shaft to rotate the impeller at a slower speed than the first electric motor, wherein only one of the first and the second electric motors is provided with a start winding and the other is not; and

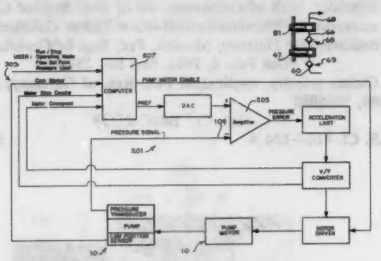
e. control means for selectively energizing the first and second electric motors, the second electric motor being energized during operation of the first stage and the first electric motor during operation of all stages, said control means being further operative to energize said one of the electric motors long enough to bring said other electric motor up to operating speed and then energizing said other electric motor to start it.

4,352,636

DUAL PISTON PUMP

Williams G. Patterson, Palo Alto; Allen B. Rochkind, Santa Cruz; Leslie A. Miller, San Jose, and Martin P. T. Bradley, Cupertino, all of Calif., assignors to Spectra-Physics, Inc., San Jose, Calif.

Filed Apr. 14, 1980, Ser. No. 139,648
Int. Cl.³ F04B *49/06*
U.S. Cl. 417—22 **23 Claims**



1. A pump for producing a continuous outflow of liquid at relatively high pressure and comprising,

pressure piston means for pressurizing the liquid,

said pressure piston means including a pressure piston movable through suction and expulsion strokes,

damper piston means for storing some of the liquid displaced by the pressure piston during the expulsion stroke of the pressure piston and for delivering the stored pressurized liquid to an outlet of the pump during the suction stroke of the pressure piston,

said damper piston means including a damper piston movable through storage and expulsion strokes,

connecting means connecting the pressure piston means and the damper piston means in series with the flow outlet from the pressure piston means connected to the flow inlet to the damper piston means,

drive means for driving the pressure piston and damper piston in cooperation to produce a continuous outflow of pressurized liquid from the damper piston during all conditions of movement of the pistons,

said drive means including a rotatable cam shaft, a pressure piston drive cam mounted on the cam shaft, and a damper piston drive cam mounted on the cam shaft,

the cams being contoured to produce, at a constant speed of rotation of the cam shaft, a constant amount of outflow of pressurized liquid from the damper piston at all points in the cycle of rotation of the cam shaft except for a short interval at the beginning of the expulsion stroke of the pressure piston and an increased amount of outflow during said short interval,

control means for slowing down the speed of rotation of the cam shaft during said short interval to produce the same amount of outflow as produced during the rest of the cycle of rotation of the cam shaft,

sensing means for sensing the increase of outflow from the damper piston during said short interval and for supplying a feedback control signal to the control means, and

wherein the control means include a first digitally operated control loop which controls the speed of rotation of the cam shaft except during said short interval and wherein the control means include an analog operated control loop which controls the speed of rotation of the cam shaft during said short interval at the beginning of the expulsion stroke of the pressure piston.

16. A method of producing a continuous flow of liquid at relatively high pressure from a pump and comprising,

connecting a pressure piston assembly and a damper piston assembly in series with the outlet of the pressure piston

assembly connected to the inlet of the damper piston assembly,

pressurizing the liquid by moving a pressure piston through a long inlet stroke and a relatively short expulsion stroke, and

smoothing out the outflow from the pressure piston by moving a damper piston in cooperation with the movement of the pressure piston,

said smoothing out step comprising,

storing some of the liquid displaced by the expulsion stroke of the pressure piston in the damper piston assembly during the inlet stroke of the damper piston and

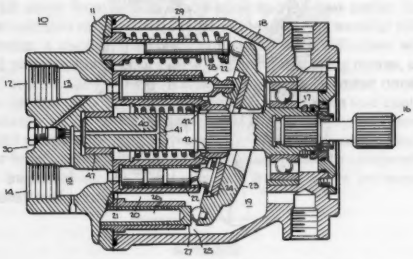
delivering the stored pressurized liquid to the outlet of the pump during the expulsion stroke of the damper piston.

4,352,637

JET COOLING PUMP

Charles O. Weisenbach, Watertown, N.Y., assignor to General Signal Corporation, Stamford, Conn.

Filed Jun. 4, 1980, Ser. No. 156,522
Int. Cl.³ F04B *23/10*
U.S. Cl. 417—54 **7 Claims**



1. A variable displacement pump comprising

a pump having an inlet cavity adapted to be connected to a source of inlet fluid,

an oulet chamber for receiving outlet fluid of the pump,

a casing enclosing a casing chamber and a pumping assembly for drawing fluid from the inlet into the pumping assembly and discharging fluid under pressure into the outlet chamber,

a displacement control operatively associated with the pumping assembly for controlling the output pressure or flow or both of the variable displacement pump, and adapted to maintain the output pressure of the pump at a predetermined value when the output flow of the pump is nill, thereby causing the temperature of the fluid in the pump and the pump itself to rise,

cooling means for drawing inlet fluid into the pump casing for cooling the pump and the fluid therein comprising:

(a) an inlet cavity in fluid communication with the inlet chamber and the casing chamber,

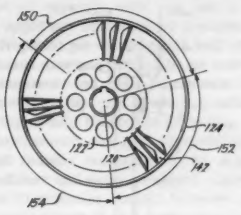
(b) a jet pump operative associated with the inlet cavity and the casing chamber for providing a high velocity stream of fluid directed along a path through the inlet chamber and into the casing chamber, whereby fluid in the inlet cavity is entrained by the jet stream and carried along with the stream into the casing chamber.

4,352,638

ROTOR ASSEMBLY FOR WAVE COMPRESSION SUPERCHARGER

James K. Vallance, Northville, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 5, 1979, Ser. No. 90,948
Int. Cl.³ F04F *11/02*
U.S. Cl. 417—64 **4 Claims**



1. A compressor for compressing air supplied to an engine having an air intake manifold and an exhaust gas manifold comprising:

a rotor mounted for rotation having a plurality of vanes disposed around the rotor circumference defining axially and radially extending cells therebetween, said vanes being arranged in zones, the vanes of each zone being spaced from adjacent vanes of that zone by a substantially equal distance, the spacing between the vanes of a zone being different from the vane spacing of any other zone, the vanes include a flange portion that extends around the periphery of said rotor vane and a stiffening bead extending axially and radially along the vane and outwardly from the vane surface having a plurality of transition regions extending to the crest of the bead from the flange portion;

an inlet exhaust gas port disposed at a first axial end of said rotor through which high pressure engine exhaust gas enters the rotor cells from the engine exhaust gas manifold;

an outlet exhaust gas port disposed at the first axial end of said rotor through which the engine exhaust gas exits the rotor cells and is returned to the engine exhaust manifold;

an air inlet port disposed at a second axial end of said rotor through which low-pressure air enters the rotor cells;

an air outlet port disposed at a second axial end of said rotor through which the air at a higher pressure exits the rotor cells and is directed to the engine inlet manifold;

wherein engine exhaust gas and air enter and exit the rotor cells as the cells rotate into alignment with the exhaust gas and air inlet and outlet ports whereby the low pressure air is compressed within the cell by the action of a pressure wave that travels axially from the first to the second rotor end, the pressure wave being produced by the engine exhaust gas that enters said inlet exhaust gas port.

4,352,639

PNEUMATIC PUMP

Henry S. Siemsen, Los Angeles, Calif., assignor to Bryce Bowmar, Burbank, Calif.

Filed Nov. 7, 1980, Ser. No. 204,864
Int. Cl.³ F04B *1/06*
U.S. Cl. 417—134 **6 Claims**

1. In a pneumatic pump:

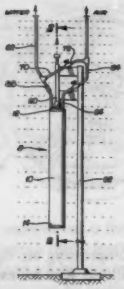
(a) a hollow pump casing;

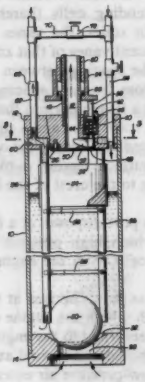
(b) a relatively fixed guide means supporting the pump casing for limited vertical movement in accordance with its positive and negative buoyancy;

(c) means forming a vent opening adjacent the upper end of the casing;

(d) a valve normally closing the vent opening;

(e) conduit means for continuously admitting air under pressure into the pump casing;
(f) outlet conduit means opening near the lower end of the pump casing for conducting water forced from the casing;
(g) means forming a large water inlet for conducting water into the lower end of the casing;
(h) means for substantially preventing reverse flow through said water inlet means;





(i) means operated upon arrival of said casing to its upper limit for opening said vent valve to allow inrush of water through said inlet means; and
(j) means for closing said vent valve as said casing substantially fills with water whereby air under pressure works upon the water to force it through said outlet conduit means.

4,352,640

FLUID COMPRESSOR

Hiroshi Takamatsu, Ohi; Hiroshi Tanaka, Niiza, and Mutsuo Sugisaki, Ohi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

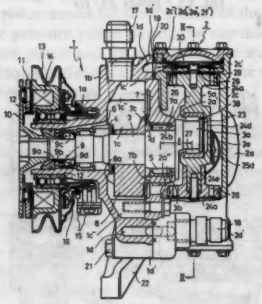
Filed Feb. 21, 1980, Ser. No. 123,453

Claims priority, application Japan, Feb. 24, 1979, 54-022427[U]

Int. Cl.³ F04B *1/04*

U.S. Cl. 417—273 **8 Claims**

1. A fluid compressor comprising: a casing having a fluid suction chamber and a fluid discharge chamber formed therein, said casing having an end thereof formed open to define therein an inner peripheral surface; a drive shaft having an end thereof eccentric with respect to the axis thereof, said drive shaft being rotatably supported in said casing in an overhung manner with said eccentric end projected from said open end of said casing; a cylinder housing secured in an abutting manner to said open end of said casing, said cylinder housing having a first cylinder and a second cylinder integrally formed thereon, said first and second cylinders cruciformly intersecting with each other in a common plane, said cylinders defining a first spatial portion opening in the direction of said casing at an intersection thereof; said eccentric end of said drive shaft terminating in said first spatial portion; a first and a second piston arranged in said cylinders in an intersecting manner, said first and second pistons each having a pair of piston heads located at opposite ends thereof, a pair of opposite slip portions located at an intermediate portion thereof, and a coupling portion coupling together said opposite slip portions at ends of said opposite slip portions remote from said casing, said paired slip portions and said coupling portion defining a central recess, said first and second pistons engaging each other for respective reciprocating motions in a manner such that said paired slip portions of one of said pistons are directed in a different direction by 90 degrees from said paired slip portions of the other piston and said coupling portion of one of said pistons is positioned in front of said coupling portion of the other piston, said central recess defined in one of said pistons cooperating with said central recess defined in the other piston to define a second spatial portion opening solely in the direction of said casing; one of said piston heads of at least one of said first and second pistons being dismountable from the body of said at least one piston; a sliding member slidably fitted in said space, said sliding member having an aperture in which is rotatably fitted said eccentric end of said drive shaft, whereby said sliding member is moved eccentrically with respect to the axis of said drive shaft as said drive shaft rotates, to cause said first and second pistons to reciprocatingly move within respective ones of said first and second cylinders in an alternating manner; valve means provided on an outer end of each of said first and second cylinders for regulating the flow of fluid with respect to the interior of said first and second cylinders; a flange-shaped bearing retainer member having a hub formed centrally thereof, said retainer member having a peripheral edge secured to said inner peripheral surface of said open end of said casing, said hub having a central through bore and disposed around a portion of said drive shaft adjacent said eccentric end thereof with said adjacent portion of said drive shaft fitted in said central through bore, said hub being bulged in said first spatial portion of said cylinder housing; and a needle bearing mounted in said central through bore of said hub and supporting as a main bearing said adjacent portion of said drive shaft, said bearing being partially located in said first spatial portion of said cylinder housing.

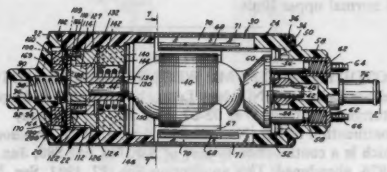


4,352,641

SELF-CONTAINED ROTARY FUEL PUMP

Charles H. Tuckey, Cass City, Mich., assignor to Walbro Corporation, Cass City, Mich.

Filed Feb. 19, 1980, Ser. No. 123,103
Int. Cl.³ F04B 49/08
U.S. Cl. 417—283 1 Claim



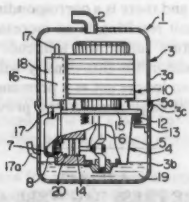
1. A pump body for a rotary fuel pump having an inlet end and an outlet end in which said inlet end comprises a first end plate on the inlet end of the pump, a circumferential housing and outlet plate, a pump rotor in said housing between said first end plate and said outlet plate with predetermined clearance in the chamber of said circumferential housing, said first end plate adjacent said rotor having an opening in communication with the outlet pressure of said pump, a relief valve overlying said first end plate at the inlet end of said pump comprising a circular member having two radially spaced annular ridges adjacent and pressing against first end plate to contain the pressure in said pump body, spring means resiliently biasing said relief valve against said first end plate wherein pressure above a predetermined setting of said spring will cause said relief valve to lift away from said first end plate and by-pass outlet fluid past said two ridges of said relief valve, said first annular ridge forming a central pressure chamber in communication with said pump outlet pressure acting against said spring means, and said second annular ridge forming an annular chamber outside said central chamber to receive pressure fluid from said central chamber when said spring means is overcome by said pump outlet pressure thereby increasing the effective pressure area of said relief valve acting against said spring means to compensate for increased spring force resulting from a valve movement against said spring.

4,352,642

HERMETIC MOTOR-COMPRESSOR

Akira Murayama; Fumio Harada, and Kazutaka Suefuji, all of Shimizu, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 2, 1980, Ser. No. 136,675
Claims priority, application Japan, Apr. 4, 1979, 54/43477[U]; Jul. 6, 1979, 54/92533[U]
Int. Cl.³ F04B 21/00, 39/00, 39/04
U.S. Cl. 417—312 12 Claims



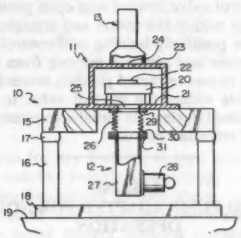
10. A hermetic motor-compressor comprising:
a closed container;
an electric motor component disposed within said closed container;
a compressor component disposed within said closed container below said motor component, said compressor having a frame upon which said motor component is mounted;
mounting means for supporting said motor and compressor components within said closed container;
an oil reservoir defined between the compressor and a bottom portion of the closed container;
a return pipe for refrigerant gas having one end communicating into an upper end of the closed container;
a suction pipe connected at one end to said compressor and opening at an opposite, inlet end into a space defined within an upper end of the closed container for introducing the refrigerant gas directly into said compressor; and
deflecting means disposed on said frame between said compressor component and motor component below said inlet end of the suction pipe and projecting radially outwardly from the top of said frame, for deflecting refrigerant gas flowing downwardly along an outer surface of the motor component radially outwardly to an inner wall of the closed container and away from said compressor component, so as to minimize contact between said refrigerant gas and exterior parts of said compressor located therebelow.

4,352,643

STRUCTURE FOR VIBRATION ISOLATION IN AN APPARATUS WITH A VACUUM SYSTEM

Nobuo Iijima, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed May 12, 1980, Ser. No. 148,723
Claims priority, application Japan, May 18, 1979, 54/61224
Int. Cl.³ F04B 39/00
U.S. Cl. 417—313 10 Claims



1. An apparatus having a vacuum system, the vacuum system including a vacuum chamber for containing main instruments of the apparatus, an exhaust device adapted to exhaust air from the vacuum chamber, the apparatus including a structure for vibration insulation for preventing the transmission of the vibration of said exhaust device to a main section of the apparatus, in which structure said exhaust device comprises a bellows connected with said vacuum chamber, an exhaust tube connected with said bellows, a vacuum pump attached to said exhaust tube; and said bellows, said exhaust tube and said vacuum pump being arranged in the form of a pendulum in which the bellows is used as a fulcrum.

4,352,644

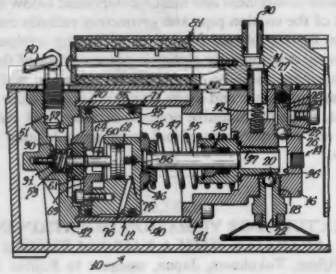
AIR-HYDRAULIC PUMP

Michael T. Landrum, Elysian, and Terrance M. Anderson, Owatonna, both of Minn., assignors to Owatonna Tool Company, Owatonna, Minn.

Filed May 12, 1980, Ser. No. 148,696
Int. Cl.³ F01L 21/04; F04B 17/00
U.S. Cl. 417—402 2 Claims

1. A hydraulic pump having a reciprocally-operable pumping member; a fluid motor including a cylinder containing a reciprocal piston movable between a retracted position at one end of the cylinder and an extended position and connected to

said pumping member, a fluid inlet through which fluid under pressure may be admitted into said one end of the cylinder to drive the piston towards said extended position, spring means for driving the piston towards said retracted position, and a fluid outlet for exhausting fluid within the cylinder to permit the spring means to drive the piston towards said retracted position; a control valve in said piston alternately movable between a closed position wherein fluid under pressure from said fluid inlet drives said piston toward the extended position and an open position wherein said one end of the cylinder is connected through the piston to said fluid outlet to permit movement of the piston to said retracted position by said



spring means to thereby reciprocate the pump member; control means responsive to the piston approaching the retracted position for shifting the control valve to the closed position and responsive to the piston in the extended position for shifting the control valve to the open position; means yieldably urging said control valve toward said open position including a spring member within the piston and engaging the control valve; means for positively holding said control valve in said open position when said piston is moving from said extended position thereof to said retracted position thereof; and resilient means engageable within the control valve to maintain the control valve closed during the initial movement of the piston away from said retracted position.

4,352,645

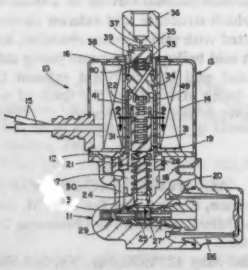
SOLENOID PUMP ADAPTED FOR NOISELESS OPERATION

James H. M. Meyer, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Division of Ser. No. 925,731, Jul. 18, 1978, Pat. No. 4,308,475. This application Feb. 14, 1980, Ser. No. 121,631

Int. Cl.³ F04B *17/04*

U.S. Cl. 417—417 **3 Claims**



1. In a solenoid-actuated hydraulic pump including means defining a pumping chamber having inlet and outlet ends, movable means mounted within said pumping chamber and adapted for reciprocation in an axial direction between normal upper and lower limits under hydraulic load to pump fluid through the chamber, said movable means including an armature, a magnetic coil associated with said armature and operable when energized to move said armature, the improvement in said solenoid-actuated fuel pump being defined by said armature being solid with peripheral longitudinal slots to permit flow between said inlet and outlet ends and by hydraulic dashpot means including a fluid-holding recess in an upper end of the armature for limiting movement of the armature beyond said normal upper limit.

4,352,646

ROTODYNAMIC PUMP WITH SPHERICAL MOTOR

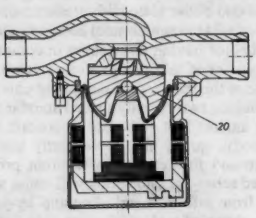
Ingeborg Laing, and Nikolaus Laing, both of 7141 Aldingen bei Stuttgart, Hofener Weg 35-37, Fed. Rep. of Germany

Continuation of Ser. No. 820,446, Aug. 1, 1977, abandoned, which is a continuation-in-part of Ser. No. 648,580, Jan. 12, 1976, abandoned. This application Feb. 27, 1981, Ser. No. 238,855

Claims priority, application Austria, Jan. 13, 1975, 180/75

Int. Cl.³ F04B *17/00*

U.S. Cl. 417—420 **2 Claims**



1. A pump motor unit of the type having a combined impeller-armature rotatably mounted on a bearing means adapted to pump a throughput through the unit and a stator for generating magnetic flux to exert a drive torque on the armature where the stator is separated from said armature by a spherical air gap; the improvement characterized in that the armature comprises a magnetic material the coercive force of which does not exceed substantially 500 oersteds and the residual flux density of which is set at an upper limit such that when the pump-motor unit is throttled and there is corresponding throughput through the unit resulting in a correspondingly low torque load on the impeller armature, the flux density will not reverse under the influence of magnetic flux generated by the stator whereby the magnetic material will act as a permanent magnet to provide synchronous rotation of the impeller-armature, and where the residual flux density of said magnetic material is also sufficient to hold said impeller-armature on said bearing means when the pump motor unit is not operating and the stator is not generating magnetic flux, and such that when the pump-motor unit is unthrottled and there is a correspondingly high throughput through the unit resulting in an increased torque load on the impeller-armature under the influence of magnetic flux generated by the stator, the flux density will reverse whereby the armature will no longer act as a permanent magnet but act similar to a squirrel cage armature to provide asynchronous rotation.

4,352,647

INSULATED TIRE PRESS BAG WELL AND A METHOD THEREFOR

Harold S. Rocco, 4271 Darrow Rd., Stow, Ohio 44224

Filed Dec. 19, 1980, Ser. No. 218,113

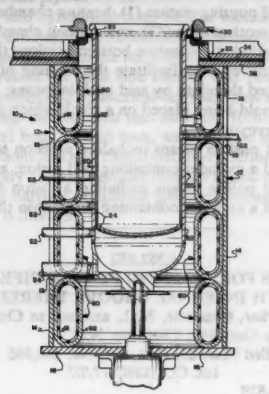
Int. Cl.³ B29H *5/02, 5/08*

U.S. Cl. 425—48 **30 Claims**

1. An insulated bag well of a tire press, comprising:

a bag well for a tire curing press,

a housing, said housing located about said bag well and spaced therefrom,



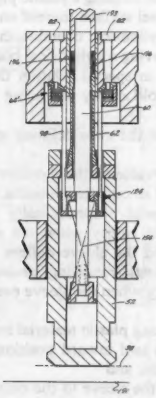
at least one envelope, said envelope located between said bag well and said housing and insulating said bag well.

4,352,648

POWDERED METAL PRESS AND TOOLING THEREFOR

Carl W. Hilton, Muskegon, Mich., assignor to Toolmakers, Incorporated, Muskegon, Mich.

Filed Dec. 22, 1980, Ser. No. 218,657
Int. Cl.³ B29C *3/00*
U.S. Cl. 425—78 **26 Claims**



1. A lower punch assembly for use with a metal compacting press to form compacted metal parts, said assembly comprising:

a punch shank having a lower heel adapted to be engaged by a cam, said shank defining a bore having a vertical axis;

a core rod extending into said punch shank and being coaxial therewith;

connecting means for slidably connecting said shank to said core rod so that said shank may slide up and down on said core rod; and

mounting means engaging said shank for mounting said assembly to a metal compacting press and for permitting said punch shank to rotate about said vertical axis.

13. A lower compacting tool for use with a complementary upper tool assembly for compacting powder metal within a die cavity defined by a die case, said tool comprising:

an elongated punch shank having an open top and defining a bore;

a closure secured to said open top and having a central aperture;

an elongated, generally cylindrical core rod extending through said central aperture and having a lower end disposed within said punch shank bore;

a generally cylindrical punch disposed around said core rod and having a lower end secured to said closure, said punch shank and said punch being movable vertically along said core rod; and

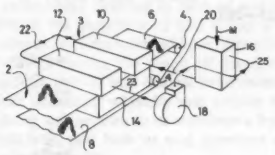
core rod withdrawal means engaging said core rod for permitting said core rod to extend vertically with said punch and said punch shank during an ejection stroke to reduce ejection loads, said core rod withdrawal means including a seat secured to the lower end of said core rod and a spring having an end engaging said seat so that said core rod extends with said punch against the bais of said spring during the ejection stroke.

4,352,649

APPARATUS FOR PRODUCING A NON-WOVEN WEB FROM PARTICLES AND/OR FIBERS

Edmond M. Jacobsen, Skanderborg; Otto V. Nielsen, Aarhus N., and Torsten B. Persson, Maarslet, all of Denmark, assignors to Scan-Web I/S, Risskov, Denmark

Filed Mar. 20, 1980, Ser. No. 132,131
Int. Cl.³ B29J *1/00*
U.S. Cl. 425—83.1 **33 Claims**



1. Apparatus for dry forming at least one of particles and fibers into a web-like material comprising:

(a) a moving foraminous forming sheet;

(b) a distributor unit positioned above said forming sheet with an outlet thereof directed toward and extending across said forming sheet; and

(c) suction means positioned beneath said forming sheet for sucking air downward through the forming sheet and for conveying said particles and fibers from said distributor unit outlet toward said forming sheet;

wherein said distributor unit comprises:

(1) an inlet for material comprising at least one of fibers and particles;

(2) a flow producing means for recirculating a flow of said particles and fibers in a path extending across said forming sheet within said distributor unit between said inlet and outlet, said flow producing means being formed at least in part by a flow guiding pipe, at least a portion of which is formed by a perforated outlet screen wall; and

(3) means, within said flow guiding pipe, for directing a portion of said flow of particles and fibers outwardly through said outlet screen wall.

4,352,650

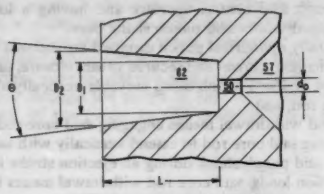
NOZZLE FOR FLASH-EXTRUSION APPARATUS

Larry R. Marshall, Chester, Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 24, 1981, Ser. No. 247,220
Int. Cl.³ B28B *17/00*; D01D *3/00*
U.S. Cl. 425—174.8 E **3 Claims**

1. In a flash-extrusion apparatus of the type which includes

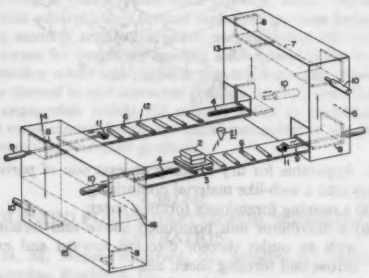
a nozzle having a tunnel immediately downstream of and coaxial with an exit orifice, the minimum tunnel diameter being at least four times as large as the orifice diameter, the improvement comprising a flared tunnel having a diameter that increases from inlet to outlet with a flare angle in the range of 10 to 35 degrees and a length that is in the range of 0.6 to 1.0 times the minimum diameter and 0.45 to 0.85 times the maximum diameter of the tunnel.



4,352,651
MOLD EQUIPMENT

Sadao Kumasaka, Tanashi; Satomi Tada, Tokyo; Goro Yoneyama, Kawagoe, and Kazuo Hashimoto, Kawagoe, all of Japan, assignors to Toyo Rubber Chemical Industrial Corp., Tokyo, Japan

Filed Oct. 9, 1980, Ser. No. 195,472
Claims priority, application Japan, Oct. 13, 1979, 54-132054
Int. Cl.³ B29D 27/04
U.S. Cl. 425—261 5 Claims

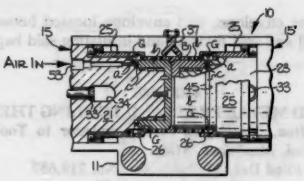


1. A mold equipment comprising:
a material pouring station (1);
a first lift chamber (5) at the outlet portion of said material pouring station;
a heating chamber (7) containing a curing atmosphere and disposed at the outlet portion of said first lift chamber;
a pull-in means (9) for drawing a metal mold from the outlet of said material pouring station into said first lift chamber (5);
a second lift chamber (13) at the outlet portion of said heating chamber (7);
a mold releasing work station (12) adjacent to said second lift chamber (13);
a third lift chamber (14) at the outlet portion of said mold releasing work station (12);
a cooling chamber (15) adjacent to the outlet portion of said third lift chamber (14);
a pull-in means (11) for drawing said metal mold from the outlet of said mold releasing work station (12) into said third lift chamber (14);
a fourth lift chamber (16) defined between the outlet of said cooling chamber (15) and said material pouring station (11); and
push-in means (10) for forcing said metal mold into said heating chamber, mold releasing work station, cooling chamber, and said material pouring station, respectively;
said material pouring station (1), heating chamber (7), mold releasing work station (12), and cooling chamber (15) are each provided at respective bottom portions thereof with a roller conveyor to facilitate the running of said metal mold forced thereinto by said push-in means;
said metal mold being placed on a truck which runs on said roller conveyor;
each of said push-in means including a piston to push said truck, and a cylinder containing said piston; and
each of said pull-in means including a piston to pull said truck, and a cylinder containing said piston thereof.

4,352,652
APPARATUS FOR MOLDING PLASTIC PIPE FITTING WITH INTERNAL GROOVE THEREIN

Jasper D. Barber, Charlotte, N.C., assignor to Charlotte Pipe and Foundry Company, Charlotte, N.C.

Filed Mar. 23, 1981, Ser. No. 246,865
Int. Cl.³ B29C 17/07
U.S. Cl. 425—525 6 Claims



1. In an apparatus for forming a plastic pipe structure having a groove on the internal surface thereof and including
(a) a mold having a cylindrical chamber therein,
(b) an internal core having a cylindrical body adapted to fit in the mold chamber in spaced relation thereto for defining with the mold a mold cavity extending between the mold and the core body,
(c) shoulder means on the core defining an end of the mold cavity,
(d) a sleeve axially movable on the shoulder means between an inward position and an outward position, wherein the sleeve defines with the mold a substantially uninterrupted end portion of the mold cavity when the sleeve occupies its inward position, and the sleeve defines with the mold an internal annular plastic-receiving groove communicating with the mold cavity when the sleeve occupies the outward position,
(e) means for introducing plastic material into the cavity when the sleeve occupies said inward position to form a plastic pipe structure therein, and
(f) means for moving the sleeve to the outward position,
the combination therewith of an improvement in the internal core wherein:
(g) the cylindrical body of the internal core is provided with a pair of relatively narrow peripheral grooves therein which are open to the periphery of the internal core at all times during use of the apparatus and are positioned in radial alignment with the plastic-receiving groove defined in the mold by the axially movable sleeve when it occupies said outward position, said peripheral grooves being of such narrow width as to prevent the plastic material from entering and clogging the peripheral grooves when the plastic material is being introduced into the mold cavity,
(h) means for introducing fluid pressure into the core body to flow outwardly through said peripheral grooves when the sleeve occupies said outward position to cause the fluid to pass through said peripheral grooves and pressurize a portion of the plastic pipe structure into the internal plastic-

receiving groove in the mold cavity to form an internal groove in the pipe structure, and

(i) wherein said cylindrical body further includes at least two axially spaced-apart cylindrical body sections, and a cylindrical filler section in the form of a ring, said ring having an annular recess on each side thereof and positioned in the space between said cylindrical body sections and in abutting relationship thereto such that said ring forms a part of the cylindrical body of said core, and wherein said cylindrical body sections and said ring collectively define the periphery of said body and said annular recesses in said ring define said relatively narrow peripheral grooves through which fluid pressure is directed.

4,352,653

CLAMPING DEVICE FOR MOLDS USED IN THE BLOW MOLDING OF HOLLOW PLASTIC ARTICLES

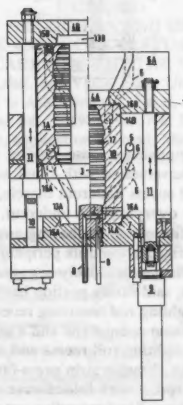
Lothar Ott, Schwalbach, and Dieter Gessner, Karben, both of Fed. Rep. of Germany, assignors to tpT Machinery Corporation, Norwalk, Conn.

Filed Dec. 16, 1980, Ser. No. 216,859

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1979, 2950723

Int. Cl.³ B29C *17/07, 1/16*

U.S. Cl. 425—541 13 Claims



1. A mold assembly having segmented side mold portions, for example, to be used in blow molding of hollow plastic articles, which comprises side mold portions, each having upper and lower ends, movable away from each other to open said mold, means associated with said side mold portions and operative during the opening thereof for moving said portions first in an axial direction without separating said portions and subsequently in continuation of said movement linearly away from each other such that parting faces of said portions maintain a lateral alignment, said mold assembly including upper and lower members, each respectively cooperative with said upper and lower ends of said mold portions with means therein for receiving and locking the side mold portions in the closed position.

4,352,654

APPARATUS FOR THE PRODUCTION OF SMALL SYNTHETIC RESIN ARTICLES

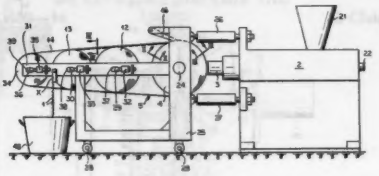
Helmut Heimberger, Steinhausen, Switzerland, assignor to Optilon W. Erich Heilmann GmbH, Cham, Switzerland

Filed Dec. 22, 1980, Ser. No. 218,816

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1979, 2951978

Int. Cl.³ B29D *5/00*

U.S. Cl. 425—545 5 Claims



1. An apparatus for producing a succession of small molded articles, especially end-stop members for slide fasteners, comprising:

a form wheel provided with a multiplicity of forming beds distributed around the periphery of said wheel;

a composite forming band having a plurality of endless band members meeting along the periphery of said wheel and extending around a portion of said periphery before being deflected away from the periphery of said wheel said band members collectively defining at each of said beds along said portion of the periphery of said wheel a respective generally closed core surrounded by a respective individual mold cavity having the shape of the articles to be molded, at least two of said endless band members being formed with undercuts whereby said articles have overhangs enabling said articles to be withdrawn by said composite band from said beds as said members are drawn away from said wheel;

means including an injection molding head juxtaposed with said portion of the periphery of said wheel for introducing synthetic resin into said cavities; and

means for mutually offsetting said members passage therefrom away from said wheel and upon the withdrawal of said articles by the composite band from said bed to release said articles from said composite band.

4,352,655

ENGINE

Winston B. Tucker, deceased, late of Seattle, Wash. (by Mary L. Tucker, administratrix), and Edward L. Tucker, 626 NW. 49th St., Seattle, Wash. 98107, assignors to Willmot A. Tucker and Edward Tucker, both of Seattle, Wash.

Filed Oct. 5, 1979, Ser. No. 82,036

Int. Cl.³ F23C *11/04*

U.S. Cl. 431—1 6 Claims

1. An apparatus for producing a flaming, high-pressure, high-velocity fluid stream, comprising:

(a) a compressor having a primary piston disposed in a primary cylinder, defining a closed combustion chamber, wherein the piston is capable of reciprocating in the cylinder;

(b) a prime mover means to reciprocate the piston;

(c) an air inlet means in the compressor for injecting air into the combustion chamber so that the air is compressed by the piston;

(d) fuel inlet means in the compressor for injecting fuel into the combustion chamber after the air is compressed, thereby forming an air-fuel mixture in the combustion chamber;

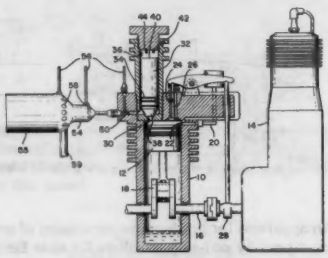
(e) ignition means to ignite the air-fuel mixture in the combustion chamber;

(f) an exhaust port communicating with the combustion chamber to remove the ignited air-fuel mixture from the combustion chamber;

(g) a chamber surrounding the exhaust port and having:

(i) a floating valve piston capable of reciprocating in the chamber and capable of sealingly seating on the exhaust port;

(ii) means for applying a pressure to the floating valve piston to ensure that the piston unseats from the port



only when a predetermined pressure is achieved in the combustion chamber of the compressor;

(iii) means for allowing the ignited air-fuel mixture to exit the combustion chamber through the exhaust port and chamber when the piston unseats from the exhaust port; and

(h) means for adding additional air and fuel to the exiting ignited air-fuel mixture to produce secondary combustion, thereby generating a flaming, high-pressure, high-velocity fluid stream.

4,352,656

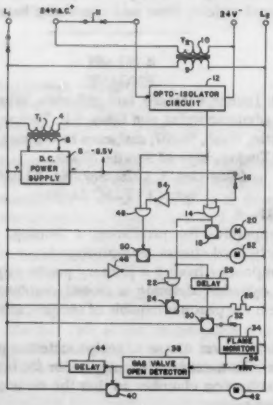
GAS APPLIANCE CONTROL DEVICE

Roger P. Michaud, Lewiston, Me., and Douglas B. Campbell, deceased, late of Gilford, N.H. (by Diane Campbell, administratrix), assignors to American Stabilis, Inc., Lewiston, Me.

Filed Sep. 21, 1979, Ser. No. 77,628

Int. Cl.³ F23H 5/00; F23N 5/00; F23Q 9/08

U.S. Cl. 431—72 **8 Claims**



1. A control circuit for controlling the operation of a pilotless gas system including igniter means and a gas supply valve, comprising:

means for producing an appliance-activating control first signal;

first logic means responsive to said first signal for activating said igniter means;

first delay circuit means for producing a second signal delayed from said first signal by a first predetermined delay time period;

gas supply valve control circuit means responsive to said second delayed signal for opening the gas supply valve after the first predetermined delay time period for exposing said igniter means to said gas;

detector means for producing a third signal when the gas supply valve is in the open position; and

second delay circuit means for producing a fourth signal in response to said third signal after a second predetermined delay time period, said fourth signal being applied to said first logic means to deactivate the igniter means said second predetermined time period after opening of the gas supply valve, whereby the igniter means is activated for the first predetermined time period prior to opening of the gas supply valve, and the igniter means is deactivated after the second predetermined time period following opening of the gas supply valve.

4,352,657

LIGHTING DEVICE

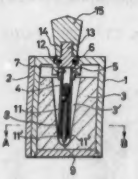
Taro Yanai, No. 3-13, Shirakawa 1-chome, Koto-ky, Tokyo, Japan

Filed Jun. 27, 1980, Ser. No. 163,911

Claims priority, application Japan, Dec. 28, 1979, 54-182674[U]

Int. Cl.³ F23Q 2/32

U.S. Cl. 431—127 **4 Claims**



1. A lighter comprising a case having a fuel absorbent therein adapted to be saturated with a fuel, said fuel absorbent having a lighter rod access undercut therein, said case having a threaded opening overyling the undercut, a lighter rod assembly including a fitting portion having a radially outwardly extending flange defined around its periphery and a threaded portion below said flange threadably engaged in said threaded opening of said case, said fitting portion having a bottom face with a cylindrical lighting rod receiving recess, a tubular lighting rod having a bottom opened end and a top end press-fitted into the cylindrical lighting rod recess and adapted to extend into the undercut, an abrasive strip press-fitted into the open end of said lighting rod, a wick folded over said abrasive strip on the interior end thereof and extending out of the bottom end of said lighting rod on each side of said strip, and a knob press-fitted onto said fitting portion above the flange thereof.

4,352,658

GAS LIGHTER

Alfred Racek, Seitenbergstr. 54, 1160 Vienna, Austria

Filed Mar. 3, 1980, Ser. No. 126,358

Claims priority, application Austria, Mar. 5, 1979, 1628/79

Int. Cl.³ F23Q 1/04

U.S. Cl. 431—254 **4 Claims**

1. A gas lighter comprising:

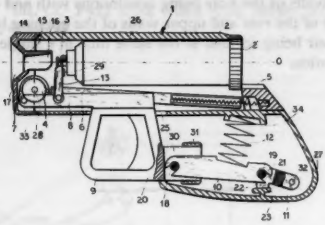
a casing provided with a mouthpiece having an aperture;

a gas cartridge in said casing having an axis aligned with said aperture and an outlet on said axis separated by an ignition

space from said mouthpiece, said cartridge being provided with a shut-off valve normally closing said outlet;

pyrophoric means in said casing at a location offset from said axis for igniting a flow of flammable gas issuing from said outlet, said pyrophoric means including a spark-generating wheel in a plane including said axis;

actuating means coupled with said wheel and with said shut-off valve for opening the latter while rotating said



wheel in a direction aiming the generated sparks toward said ignition space; and

a hood on said mouthpiece extending inward from said aperture toward said cartridge and bounding said ignition space on a side of said axis opposite said pyrophoric means for intercepting sparks traversing the gas flow and redirecting such sparks into said ignition space, said hood having a concave side open toward said spark-generating wheel.

4,352,659

METHOD OF HEATING AN END OF A LENGTH OF PLASTIC PIPE AND A CIRCULATING AIR FURNACE FOR CARRYING OUT THE METHOD

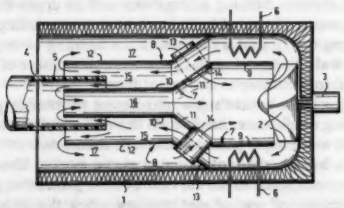
Erkki Salmela, Lahti, and Väinö Kulo, Uusikylä, both of, Finland, assignors to Asko-Uop Oy, Lahti, Finland

Filed Jul. 1, 1981, Ser. No. 279,521

Claims priority, application Finland, May 7, 1981, 811410

Int. Cl.³ F27D *5/00;* **F24J** *3/00;* **F26B** *25/00*

U.S. Cl. 432—10 **8 Claims**



1. A method of heating an end of a length of plastic pipe to be belled comprising the steps of

passing air from the exhaust side of a fan across heating means, heating the air as it crosses the heating means,

passing the heated air in the form of an annular flow substantially coaxially with a centre axis of an end of the length of pipe towards the end of the length of pipe,

dividing the annular air flow of heated air into two partial annular air flows passing over the outer and inner surfaces, respectively, of the wall of the end of the length of pipe, and returning the heated air to the suction side of the fan.

4,352,660

METHOD AND APPARATUS FOR BURNING FINE-GRAIN MATERIAL

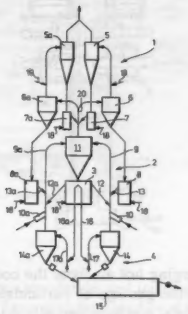
Janos Steiner, Budapest; Kalman Wenzly; Jozsef T. Toth, both of Almasfuzito, all of Hungary; Peter Tiggesbaumker, Oelde, Fed. Rep. of Germany; Wolf Goldmann, Beckum, Fed. Rep. of Germany, and Gerhard Butschko, Hamm, Fed. Rep. of Germany, assignors to Magyar Aluminiumipari Troszt, Hungary and Krupp Polysius AG, Fed. Rep. of Germany

Filed Jan. 19, 1981, Ser. No. 226,476

Claims priority, application Hungary, Jan. 23, 1980, 136/80

Int. Cl.³ F27B *15/00;* **C01F** *7/02*

U.S. Cl. 432—14 **13 Claims**



1. In a method of burning, calcining, or sintering fine grained alumina material wherein said material is preheated in a preheater, discharged from said preheater to and burnt in a burning zone, discharged from said burning zone to a residence zone, and thence discharged from said residence zone to a cooling zone, and wherein a portion of the material discharged from said residence zone is recycled through said burning zone, and wherein said burning zone comprises a hot gas stream heated at a first level below that of said preheater and flowing upwardly to the latter, the improvement comprising introducing said portion of said material from said residence zone to said burning zone at a second level above said first level and below said preheater, and introducing said material from said preheater to said burning zone at a third level above both of said first and second levels.

4,352,661

SHAFT KILN

James A. Crookston, and James L. Hill, both of Mexico, Mo., assignors to A. P. Green Refractories Co., Mexico, Mo.

Filed Feb. 6, 1981, Ser. No. 232,346

Int. Cl.³ F27B *15/00;* **F27D** *15/02, 1/08*

U.S. Cl. 432—14 **14 Claims**

1. A calcining apparatus comprising an upright hollow shaft having a side wall and top wall and adapted to the passage downward of particulate material from a hopper mounted in said top wall through a preheating zone of said shaft, a calcining zone of said shaft, a cooling zone of said shaft, and a discharge port, in sequence, said apparatus further comprising:

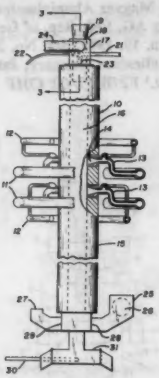
a means for forming and proportioning a fuel/air mixture, a means for burning said mixture and introducing the resulting combustion product gases into the calcining zone, and a means coaxial with the shaft and disposed above the calcining zone for removing spent combustion product gases from the shaft;

a duct extending from said hopper through said top wall into said shaft and forming at least a part of the preheating zone, said duct having a preheating air inlet;

a means, extrinsic to said burning means, for heating air, a means for blowing the heated air into said duct through

said preheating air inlet, and a means for exhausting spent preheating air from the preheating zone;

a means for forcing cooling air into the cooling zone, said forcing means having an inlet end open to the atmosphere and an outlet end which penetrates the side wall of the shaft below the calcining zone; and



a means for purging hot air from the cooling zone;

whereby, during the passage of particulate material through the shaft, the material is at least partially dried by hot air in said hopper extension and the calcined material is cooled while the pressure and temperature within the calcining zone are regulated solely by the fuel/air proportioning means.

4,352,662

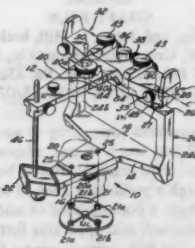
DENTAL ARTICULATOR FRAMES AND METHOD OF MAKING

Robert L. Lee, 22937 Grand Ter., Colton, Calif. 92324

Continuation of Ser. No. 965,049, Nov. 30, 1978, abandoned, which is a continuation-in-part of Ser. No. 814,815, Jul. 11, 1977, Pat. No. 4,209,909, which is a continuation-in-part of Ser. No. 581,203, May 27, 1975, Pat. No. 4,034,475, which is a continuation-in-part of Ser. No. 485,158, Jul. 1, 1974, Pat. No. 4,034,474. This application Dec. 29, 1980, Ser. No. 221,056

Int. Cl.³ A61C *11/00*

U.S. Cl. 433—56 **17 Claims**



1. A dental articulator comprising:

a first frame having a pair of guide blocks mounted thereon;

a second frame having a pair of spaced pedestals each supporting a spherical stylus, said styluses defining a hinge axis;

each of said blocks having an opening formed therein for receiving one of the styluses, said openings each being formed by a curved rear wall, a curved upper wall, a curved medial wall, and a lateral wall for guiding movement of the styluses, said rear and upper wall of each of the guide blocks being engaged by a respective one of said styluses when the frames are in centric position; and

means defining a circular hole drilled into the lateral wall of each of said blocks on a line which is collinear with said hinge axis when the styluses are in said openings and the frames are in centric position, said hole connecting with the opening in each of the blocks, the diameter of the drilled hole in the area of said rear wall being equal to the diameter of said stylus, the shape and size of the curved side walls of the hole being continuous with and equal to those of the rear and upper walls of the opening by virtue of their being formed at the same time in a single drilling operation.

4,352,663

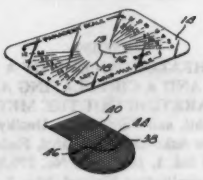
METHOD AND APPARATUS FOR SETTING A DENTAL ARTICULATOR

Robert L. Lee, 22937 Grand Ter., Colton, Calif. 92324

Filed May 7, 1980, Ser. No. 147,631

Int. Cl.³ A61C *19/04*

U.S. Cl. 433—73 **4 Claims**



1. Dental apparatus comprising:

a dental articulator including a lower frame having a pair of spaced styluses defining a hinge axis and an upper frame having a pair of guide blocks, each having an opening for receiving one of said styluses with the opening having an upper wall determining the protrusive movement of the upper frame relative to the lower frame;

a recording of a patient's jaw movement protrusive path including a reference line formed thereon which is correlated to a reference plane on the articulator; and

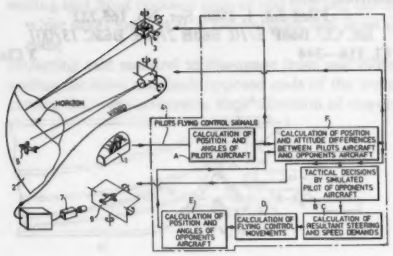
a thin flat transparent tool having a curve marked thereon which corresponds to the curvature of the protrusive path of the center of one of said styluses when the stylus is moved in engagement with the upper wall of one of the guide blocks, said tool further having means defining one or more scale lines marked thereon oriented to intersect said curve, with the intersection representing the articulator hinge axis of curvature when the guide blocks are positioned in centric relation with respect to the styluses, said tool further having markings thereon which correspond to markings on the articulator for indicating the angle at which said guide block should be set, whereby said tool curve may be aligned with said recording path and the angular orientation of said recording reference line with respect to said scale lines may be observed and utilized to set the angular orientation of said one guide block in the articulator.

4,352,664

SIMULATOR HAVING TWO INDEPENDENTLY SERVO-CONTROLLED PROJECTION SYSTEMS

Jeffrey Morrison; Stanley R. E. Dixon, and Arthur G. Barnes, all of Bristol, England, assignors to British Aerospace, Weybridge, England

Continuation-in-part of Ser. No. 936,849, Aug. 25, 1978, abandoned. This application Nov. 1, 1979, Ser. No. 90,494
Claims priority, application United Kingdom, Aug. 27, 1977, 36094/77
Int. Cl.³ F41J 9/00; G09B 9/08; H04N 7/18
U.S. Cl. 434—14 4 Claims


HORIZON
PILOTS FLYING CONTROL SIGNALS
CALCULATION OF POSITION AND ANGLES OF PILOTS AIRCRAFT
CALCULATION OF POSITION AND ATTITUDE DIFFERENCES BETWEEN PILOTS AIRCRAFT AND OPPONENTS AIRCRAFT
TACTICAL DECISIONS BY SIMULATED PILOT OF OPPONENTS AIRCRAFT
CALCULATION OF POSITION AND ANGLES OF OPPONENTS AIRCRAFT
CALCULATION OF FLYING CONTROL MOVEMENTS
CALCULATION OF RESULTANT STEERING AND SPEED DEMANDS

1. An air combat simulator including, in combination:

a part spherical screen;

a simulated manned aircraft consisting of a pilot's control station positioned to view the screen and having flight controls operable for generating flight control signals;

a movably mounted horizon projector operable for projecting onto said screen a sky and ground terrain scene;

first servo-motor means coupled to said first projector for steering the projector;

a t.v. projection system operable for projecting onto said screen an image of an opponent's aircraft, the t.v. projection system comprising a movably mounted housing containing a cathode ray tube for forming a t.v. picture of said opponent's aircraft, focusing means for projecting said t.v. picture to form said image, second servo-motor means, independent from said first servo-motor means, coupled to said housing for steering said housing to change the position of said image on said screen, and controllable deflection signal generating means connected to said cathode ray tube for varying the raster size of said t.v. picture and hence also the size of said projected image; and

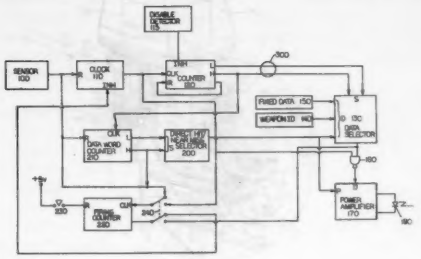
computer means, connected to said flight controls, said first and second servo-motor means and said deflection signal generating means, for (a) calculating the position and attitude of the simulated manned aircraft as determined by said flight control signals and steering said horizon projector accordingly, (b) calculating the relative position and attitude of the two aircraft, (c) making tactical decisions concerning the path of the opponent's aircraft relative to the sky and ground terrain scene based on the relative positions and attitudes of the two aircraft, (d) calculating the position and attitude of the opponent's aircraft based upon a combination of the tactical decisions and the relative position and attitude of the two aircraft and steering said housing of said t.v. projection system accordingly, and (e) calculating the relative size of the opponent's aircraft in accordance with the calculated range between the two aircraft and to vary the image size of the opponent's aircraft accordingly.

4,352,665

SMALL ARMS LASER TRAINING DEVICE

Joe W. Kimble, Falls Church, and Edsel E. Dotson, Alexandria, both of Va., assignors to Cerberonics, Inc., Falls Church, Va.

Filed Jan. 12, 1981, Ser. No. 224,068
Int. Cl.³ F41G 3/26
U.S. Cl. 434—22 16 Claims



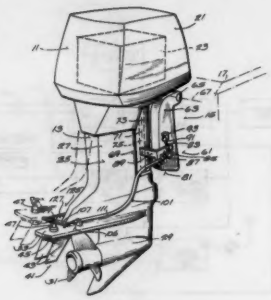
1. A laser weapons simulation and training system comprising a firearm, said firearm being capable of firing a load comprising a plurality of blank rounds; a data transmission system including in combination: sensor means, said sensor means being configured to detect when each of said rounds is fired; clock means, said clock means providing an output signal of constant frequency, said clock means being activated by said sensor means; first counter means, the output of said clock means being coupled to the input of said first counter means; data selector means, said data selector means having a plurality of selector inputs coupled to outputs of said first counter means, and having a plurality of single-bit data inputs, comprising a data word, said data inputs being selected for serial transmission by said data selector means, a portion of said data word of fixed value in order to indicate the identity of the system, and another portion of said data word being of variable value; data variance means, said data variance means having an input coupled to an output of said first counter means, said data variance means having at least one single-bit output coupled to at least one of said variable value inputs of said first data selector means, said data variance means varying said variable value inputs in order to provide an output signal from said first data selector means capable of distinguishing between a direct hit and a near miss when a round is fired; second counter means, the input of said second counter means being coupled to an output of said data variance means in order to count the number of rounds expended by operation of the system, an output of said second counter means being coupled to a reset input of said clock means in order to disable said clock means when said load is completely expended; gain controlled power amplifier means, said gain controlled power amplifier means having a data input and a power control input, said data input being coupled to said data output of said first data selector means, said power control input being coupled to an output of said data variance means for increasing the power of said gain controlled power amplifier means when said signal indicates a near miss; and modulated laser output means, said modulated laser output means being coupled to the output of said gain controlled power amplifier means for transmission of a data-modulated laser light signal; said modulated laser output means being mounted within a barrel of said firearm to project said laser light signal along the boresight of said firearm; and said data transmission system being mounted within said firearm.

4,352,666

MARINE PROPULSION DEVICE WITH TRIM SENSITIVE MOVABLE TRIM TAB

Philip J. McGowan, Waukegan, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Aug. 11, 1980, Ser. No. 176,864
Int. Cl.³ B63H *25/48*
U.S. Cl. 440—53 9 Claims



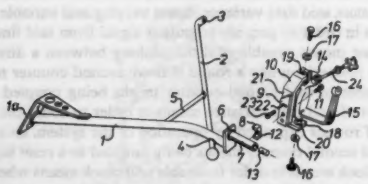
1. A marine propulsion device comprising a propulsion unit including a rotatably mounted propeller, mounting means adapted to be fixedly connected to a boat transom and connected to said propulsion unit for mounting of said propulsion unit for pivotal movement about an axis which is horizontal when said mounting means is boat mounted, a trim tab, means mounting said trim tab on said propulsion unit for pivotal movement about an axis transverse to said horizontal axis, and linkage means for displacing said trim tab about said transverse axis in response to movement of said propulsion unit about said horizontal axis.

4,352,667

RIGGER FOR A ROWING OR SCULLING BOAT

Leonard H. Neville, 3, Toutley Close, Wokingham, Berkshire, RG11 1JH, England

Filed Mar. 6, 1981, Ser. No. 241,303
Claims priority, application United Kingdom, Mar. 7, 1980, 8007828
Int. Cl.³ B63H *16/06*
U.S. Cl. 440—105 12 Claims



1. A rigger for a rowing or sculling boat, the rigger comprising at least two stays having inner ends securable to the saxboard of a boat and outer ends which converge towards one another and are secured together, a rowlock, and mounting means for the rowlock, said mounting means comprising:

(a) a hollow tubular member secured to the outer end of at least one of said stays so that its longitudinal axis will extend substantially laterally of the boat when the rigger is in use on a boat,

(b) a bracket member,

(c) means mounting said bracket member on said tubular member so that the bracket member can be adjusted relative to the tubular member longitudinally of the tubular member, angularly about the longitudinal axis of the tubular member and angularly about an axis at right angles to the longitudinal axis of the tubular member, and

(d) a pin carried by said bracket member so that, in the position of use of the rigger, the longitudinal axis thereof will extend in a generally vertical direction,

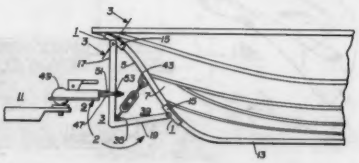
(e) said rowlock being mounted on said pin and being adjustable relative to said bracket member in the longitudinal direction of the pin.

4,352,668

DETACHABLE TOW BAR ASSEMBLY

Shannon D. Beevers, Napa, Calif., and Robert E. Croxen, 40 Iry Ct., Yountville, Calif. 94599, assignors to Robert E. Croxen, Yountville, Calif.

Filed Jul. 1, 1980, Ser. No. 165,222
Int. Cl.³ B60P *3/10*; B63B *21/64*; B63C *13/001*
U.S. Cl. 114—344 3 Claims



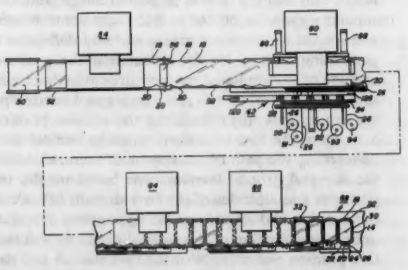
1. A detachable tow bar assembly, primarily for use in towing a small boat, said tow bar assembly comprising a pair of independent concave bow engageable means, each adapted to straddle the foremost edge of the bow of said boat, means including a pair of angularly disposed, rigid arms solidly connected at one end to each other with one of said bow engageable means carried on the opposite end of each arm, means removeably tensioning said assembly to retain the same against said bow and a detachable tow bar assembly including a tow bar attaching means being adjustably mounted on one of said rigid arms.

4,352,669

PROCESS AND APPARATUS FOR MANUFACTURING PLASTIC CONTAINERS

William W. Norton, Lincolnshire, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Nov. 10, 1980, Ser. No. 205,789
Int. Cl.³ B31B *1/84*
U.S. Cl. 493—213 27 Claims



1. A method for manufacturing plastic containers having closed ports extending from one end of the plastic containers, which comprises the steps of:

providing a first web of plastic material;

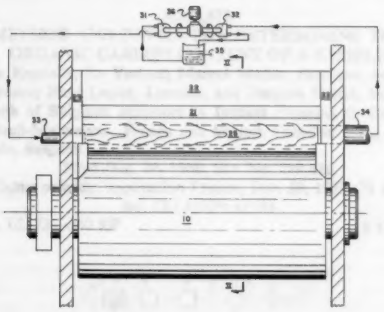
providing a second web of plastic material opposing said first web;
conveying said first and second webs to a port sealing station in a first direction;
conveying a closed port to a position adjacent said port sealing station;
providing a mandrel intermediate said first and second webs at said port sealing station;
moving said mandrel relatively with respect to said closed port in a second direction transverse said first direction to engage said closed port with said mandrel;
retracting said mandrel away from said closed port position in said second direction to bring said closed port toward said webs and then intermediate front opposed ends of said first and second webs;
sealing said front opposed ends of said first and second webs while said closed port is intermediate said front opposed ends;
retracting said mandrel to disengage from said closed port;
sealing the sides and back opposed ends of the webs; and
cutting the webs transverse their direction of conveyance.

4,352,670

CONVERTING MACHINE GUM BOX

Gregory Georgiades, Longmeadow, Mass., assignor to Westvaco Corporation, New York, N.Y.

Filed Oct. 6, 1980, Ser. No. 193,909
Int. Cl.³ B05C *1/06*
U.S. Cl. 493—337 **7 Claims**



1. A rotary converting machine gum box comprising back, opposite ends and bottom wall portions disposed longitudinally adjacent an adhesive metering roll, said bottom wall portion also including a doctor blade for the surface of said metering roll, said wall portions and metering roll surface defining a fluid adhesive pond enclosure, the improvement comprising:

A. An adhesive flow delivery conduit at one end wall opening into said enclosure proximate of a juncture between said doctor blade with said metering roll;

B. An adhesive flow withdrawal conduit at the opposite end wall opening into said enclosure proximate of a juncture between said doctor blade with said metering roll; and

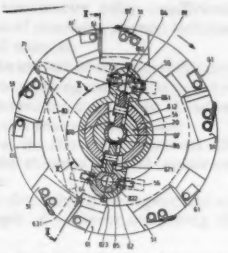
C. Adhesive flow circulation means connecting said conduits having greater withdrawal flow capacity than delivery capacity.

4,352,671

SHEET FOLDING APPARATUS FOR USE WITH CONTINUOUS WEB PRINTING MACHINE

Godber Petersen, Augsburg, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Filed Sep. 16, 1980, Ser. No. 187,542
Claims priority, application Fed. Rep. of Germany, Sep. 12, 1979, 2936768
Int. Cl.³ B65H *45/16*
U.S. Cl. 493—424 **22 Claims**



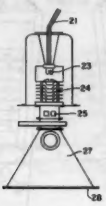
1. Sheet folding apparatus having
a sheet pick-up cylinder (2);
a central shaft (20) supporting the sheet pick-up cylinder;
leading sheet edge gripper means (G, 51) positioned on the circumference of the sheet pick-up cylinder;
sheet creasing or folding means (61) positioned on the circumference of the sheet pick-up cylinder adjustably, circumferentially offset from the sheet gripper means;
a sheet receiving cylinder (3) having sheet fold receiving means (31) positioned to receive the sheet at a crease or fold line after creasing of the sheet by the sheet creasing means;
a drive means (M, 41);
and comprising,
means (62, 63) for securing the sheet creasing means (F, 61) on the central shaft;
a drive shaft (70), coupled to the drive means (M, 41) positioned at an end portion of the central shaft and rotatable with respect to the central shaft;
means (52, 53, 54) including a hollow shaft (54) surrounding said central shaft (20) for securing the gripper means (G, 51) angularly adjustably on the central shaft (20);
a control arm (71) rotatably secured to the drive shaft (70) to rotate therewith and radially projecting therefrom and formed with a first camming surface (731);
a first control disk (63) secured to the central shaft (20) and formed with a second camming surface (641) positioned adjacent the control arm;
a second control disk (53) secured to the hollow shaft (54) which forms part of the gripper means securing means (52-54) and formed with third and fourth camming surfaces (551, 561) positioned adjacent said first control disk (63);
two selectively engageable wedge elements (81, 82), one of said wedge elements (81) being positioned between the first camming surface (731) and one (551) of the camming surfaces (551, 561) formed on the second control desk, the second wedge element (82) being positioned between the other of the camming surfaces (561) formed on the second control disk (53) and the second camming surface (641) of the first control disk (63);
and wedge element positioning means (86, 87, 861, 867) to adjust the position of the wedge elements (81, 82) with respect to the engaged camming surfaces (81: 551, 731; 82: 561, 641) to thereby control the relative angular position of the gripper means (G, 51) with respect to the drive shaft (70) and effect driving engagement of the drive shaft, and hence the drive means (M, 41) with the gripper means (G, 51) and with the first control disk (63) and hence with the central support shaft (20) and the sheet creasing and folding means (F, 61) secured thereto.

4,352,672

PROCESS FOR THE PRODUCTION OF COLORFUL AND FIGURATIVE DESIGNS OF SHAPED SYNTHETIC-RESIN ARTICLES

Karl-Heinz Spiess, Much-Schwellenbach, and Harald Stock, Königswinter, both of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Feb. 23, 1981, Ser. No. 236,935
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1980, 3006604
Int. Cl.[3] D06P *5/20*
U.S. Cl. 8—444 17 Claims



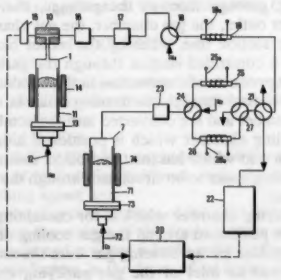
1. A process for the production of colorful and figurative designs of shaped synthetic resin articles with the use of colorants which comprises coloring a shaped article formed of a synthetic resin at least partially with colorants that change color by being exposed to electron rays and then exposing the article to electron rays with a radiation dose of between 1 and 20 Mrad in selected zones corresponding to a figurative design until color changes are achieved; said article being covered in zones other than said selected zones with a material which absorbs or reflects the electron rays during exposure to said electron rays whereby the original colors of the colorants are maintained in the covered zones.

4,352,673

METHOD AND DEVICE FOR DETERMINING THE ORGANIC CARBON CONTENT OF A SAMPLE

Jean Espitalie, Le Vesinet; Marcel Madec, Suresnes, both of France; Paul Leplat, Louvain, and Jacques Paulet, Emines, both of Belgium, assignors to Institut Francais du Petrole, Rueil-Malmaison, France and Societe Labofina S.A., Brussels, Belgium

Filed Dec. 24, 1980, Ser. No. 219,616
Claims priority, application France, Dec. 28, 1979, 79 32019
Int. Cl.[3] G01N *31/08*
U.S. Cl. 23—230 EP 6 Claims



1. A method for determining, the total organic carbon content of a sample of sediment, comprising the successive steps of:

(a) heating a sample in an inert atmosphere to a first temperature capable of cracking at least a fraction of the organic material therein and to decompose all mineral carbonates decomposable up to said first temperature to produce a first effluent containing hydrocarbons, and a solid material residue,

(b) measuring the amount of organic carbon contained in at least a fraction of the first effluent produced by said cracking of the organic material in an inert atmosphere, by selectively determining the amount of carbon in the hydrocarbons contained in said first effluent,

(c) heating the solid material residue in an oxidizing atmosphere to a second temperature at most equal to said first temperature to produce a second effluent containing CO_2, said second temperature being insufficient to produce decomposition of remaining mineral carbonates contained in the residual material,

(d) measuring the amount of organic carbon contained in the second effluent resulting from the oxidation of the organic material by measuring the amount of carbon in the CO_2 contained in said second effluent, and

(e) deriving from the above measurements effected on said first and second effluents the total organic carbon content of the sample.

2. A method for determining the organic and mineral carbon content of a sample of sediment comprising the successive steps of:

(a) heating a sample in an inert atmosphere to a first temperature capable of cracking at least a fraction of the organic material therein and to decompose all mineral carbonates decomposable up to said first temperature to produce a first effluent and a first residue,

(b) measuring the amount of organic carbon contained in at least a fraction of the first effluent produced by said cracking of the organic material in an inert atmosphere, and measuring the quantity of mineral carbon contained in the remaining fraction of the first effluent,

(c) heating the first residue of step (a) in an oxidizing atmosphere to a second temperature at most equal to said first temperature to produce a second effluent and a second residue,

(d) measuring the amount of organic carbon contained in the second effluent resulting from the oxidation of the organic material in the first residue,

(e) heating the second residue of step (c) in an oxidizing atmosphere to a third temperature capable of decomposing all the remaining mineral carbonates contained in the second residue to produce a third effluent,

(f) measuring the quantity of mineral carbon contained in the third effluent, and

(g) deriving from all the effected measurements the respective organic carbon and mineral carbon contents of the sample.

4,352,674

METHOD OF TRACING A WELL DRILLING MUD

Jean J. Fery, Bar Le Duc, France, assignor to Compagnie Francaise des Petroles, Paris, France

Filed Jan. 6, 1981, Ser. No. 222,843
Claims priority, application France, Jan. 8, 1980, 80 00263
Int. Cl.[3] G01N *33/24*
U.S. Cl. 23—230 EP 7 Claims

1. A method of tracing a well drilling mud by determining the concentration of a tracer ion in samples of filtrate from a drilling mud which contains a predetermined concentration of the tracer ion, wherein the tracer ion is the acetate ion, CH_3COO^-, and is present in the drilling mud in a concentration of from about 1×10^{-3} to about 5×10^{-2} ions per liter; said method comprising:

providing said filtrate from a drilling mud which contains said tracer ion; determining the acetate ion concentration in the filtrate sample by treating said filtrate with a solution of a strong acid selected from the group consisting of hydrochloric acid and sulphuric acid and distilling the

acetic acid thereby liberated at a temperature of from about 105° to about 130° C.; and

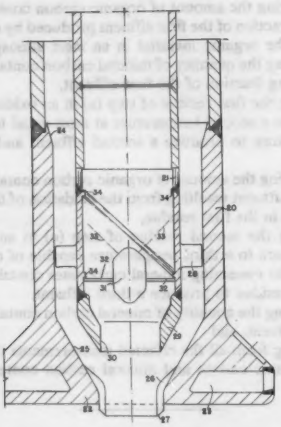
determining the strong acidity of the distillate by adding thereto an N solution of a strong base until the pH of the resulting solution is indicated by an indicator to be about 4.2-4.3, and then determining the weak acidity representing the tracer ion concentration by adding a volume V_1 of a base solution until the pH of the resulting solution is indicated by an indicator to be about 8.3.

4,352,675

COAL GASIFICATION REACTOR

Jürgen Seipenbusch, Essen, and Hans Dohren, Monchen-Gladbach, both of Fed. Rep. of Germany, assignors to Ruhrkohle Aktiengesellschaft, Essen, Fed. Rep. of Germany

Filed Nov. 30, 1979, Ser. No. 98,917
Int. Cl.³ C10J *3/50*
U.S. Cl. 48—73 **18 Claims**



1. A reactor for coal gasification wherein partial oxidation of a solid material containing carbon in the presence of water produces a carbon monoxide and hydrogen containing gas, comprising

a vortex burner connected to said reactor having an inner cylindrical conduit for admission of oxygen or combustive air and an outer concentric cylindrical conduit cooperating with said inner conduit to define an annulus for receipt of said solid material and water, and

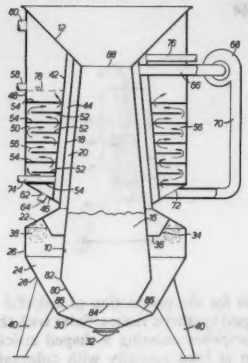
generally inwardly projecting guide means comprising helical ribs inclined relative to the longitudinal axis of the inner conduit and disposed within said inner conduit for establishing generally spiral motion to said oxygen or combustive air as it moves through said inner conduit wherein said ribs are at one end connected by articulation with said inner conduit and are glidingly supported at the other end in a recess of an annular nut which nut is adjustably connected to said inner conduit at the inner periphery thereof.

4,352,676

APPARATUS FOR CONVERTING GARBAGE INTO A FUEL GAS

David T. Szloboda, 10591 Skagit Dr., Richmond, B. C., Canada (V7E 1Z9)

Division of Ser. No. 149,241, May 12, 1980, abandoned. This application Mar. 11, 1981, Ser. No. 242,434
Claims priority, application Canada, May 8, 1980, 351505
Int. Cl.³ C10J *3/68*
U.S. Cl. 48—76 **5 Claims**



1. Apparatus for converting garbage into combustible gas, which apparatus comprises:

a combustion chamber for the garbage;

a combustion chamber inlet in an upper portion of the combustion chamber for introducing the garbage into the combustion chamber;

a combustion chamber outlet in a lower portion of the combustion chamber;

a gas chamber which is positioned around the combustion chamber and which is in communication with the combustion chamber outlet;

baffle means which is in the gas chamber, which divides the gas chamber into upper and lower portions, and which acts in the use of the apparatus to cause solid products of combustion in the gas leaving the outlet of the combustion chamber to separate out from the gas and so prevent a proportion of the solid products of combustion from entering the upper portion of the gas chamber;

a gas chamber outlet;

a suction line which is in communication with the gas chamber outlet;

motor blower means for sucking gas generated from the burning garbage through the garbage, the combustion chamber outlet, the gas chamber, the gas chamber outlet, and the suction line, whereby the motor blower means creates a controlled suction through the garbage so that gaseous products of combustion in the combustion chamber are sucked through the burning solids in the combustion chamber and are converted into the combustible gas;

a gas cooling chamber which is positioned around the gas chamber and which has inlet and outlet means for allowing cooling water to be circulated through the gas cooling chamber;

a gas purifying chamber which is for containing water and which is positioned around the gas cooling chamber;

a discharge line for introducing gas from the motor blower means into an inlet of the gas purifying chamber, the motor blower means forcing the gas along the discharge line and through the gas purifying chamber;

baffle means in the gas purifying chamber for causing the gas from the discharge line which is introduced to the gas purifying chamber to follow a zig-zag path through the gas purifying chamber; and

a gas outlet in the gas purifying chamber for removed purifying gas from the gas purifying chamber; the said apparatus being such that the gas chamber does not have direct access to environmental air so that the motor blower means can suck the gaseous products of combustion in the combustion chamber through the burning solids in the combustion chamber for the formation of the combustible gas.

4,352,677

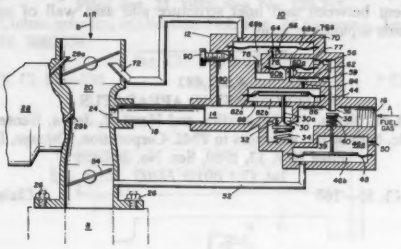
REGULATOR FOR GAS AND AIR MIXTURE

James S. Jones, 45 Crown Pl., Richardson, Tex. 75080

Filed Oct. 14, 1980, Ser. No. 196,196

Int. Cl.³ F02M *23/04*

U.S. Cl. 48—180 C **12 Claims**



1. A device for controlling the flow of fuel gas from a fuel gas source to an engine in response to a variable level vacuum generated by said engine, comprising:

a conduit connecting the vacuum input port of said engine to said fuel gas source;

a main valve disposed in said conduit for regulating the flow of said fuel gas; and

diaphragm main valve control means in fluid communication with said conduit for operating said main valve in response to the level of said vacuum, comprising

control diaphragm means for producing variations in pressure in said gas in response to said changes in the vacuum; and

amplifier diaphragm means for amplifying said variations in pressure to drive said main valve.

4,352,678

THICKENED ABRASIVE BLEACHING COMPOSITIONS

Robert A. Jones, Wirral, England, and David A. Reed, La Chapelle d'Armentieres, France, assignors to Lever Brothers Company, New York, N.Y.

Filed Sep. 24, 1979, Ser. No. 78,103

Claims priority, application United Kingdom, Oct. 2, 1978, 38961/78

Int. Cl.³ B24D *3/02*

U.S. Cl. 51—307 **10 Claims**

1. A pourable aqueous scouring cleanser composition free from a three dimensional network of entanged filaments, said composition comprising:

(i) in a liquid portion,

(a) from 0.02 to 10% by weight based on the total composition of sodium hypochlorite as a chlorine-releasing bleaching agent; and

(b) a suspending combination of from 0.1 to 0.5 moles/kg, based on the weight of the liquid portion of an anionic surfactant and a water soluble polar nonionic/zwitterionic surfactant in the form of an amine oxide and an effective amount of electrolyte in aqueous solution to form said suspending combination, said suspending combination being resistant to oxidative chlorination by said chlorine-releasing bleaching agent; and

(ii) from 0.1 to 75% by weight of a particulate abrasive suspended in said suspending combination, said liquid portion and particulate abrasive when combined providing said composition in a form from which there is absent any three dimensional network of entangled filaments.

4,352,679

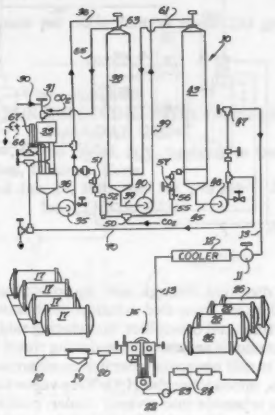
DEOXYGENATING EQUIPMENT AND METHOD OF OPERATION

Luigi Notardonato, Park Ridge; Casimir Pulawski, Chicago, and David M. Kemp, Naperville, all of Ill., assignors to FMC Corporation, Chicago, Ill.

Filed Apr. 10, 1981, Ser. No. 252,871

Int. Cl.³ B01D *19/00*

U.S. Cl. 55—38 **7 Claims**



1. A method of simultaneously deoxygenating and carbonating a supply of water, comprising the steps of receiving a flow of water from a source, metering the rate of flow of water, then injecting at a positive pressure a first flow of carbon dioxide gas into the metered, flowing water, thereafter introducing said flowing, carbonated water into a vessel, maintaining the pressure within the vessel and experienced by the metered, carbonated water at between about 14.7 and 4.9 pounds per square inch absolute, thereafter introducing a second flow of carbon dioxide gas into said vessel in counterflow to said water therein, removing excess carbon dioxide from said vessel at the upstream side of the vessel to maintain said pressure, introducing said excess carbon dioxide into the flowing water upstream from said vessel and thereafter cooling said flow to a 34°–37° F. temperature, so as to remove oxygen from the water and leave the cooled carbonated water discharged from said vessel with less than 1.0 dissolved volumes of carbon dioxide, and thereafter drawing off the deoxygenated, carbonated flow of water.

4,352,680

PROCESS AND/OR FACILITY FOR DRIVING OFF DISSOLVED, CORROSIVE GASEOUS CONSTITUENTS FROM WATERY SOLUTIONS

Erich Hackler, Essen-Kettwig, Fed. Rep. of Germany, assignor to Didier Engineering GmbH, Fed. Rep. of Germany

Filed Jul. 19, 1979, Ser. No. 58,761

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1978, 2832359

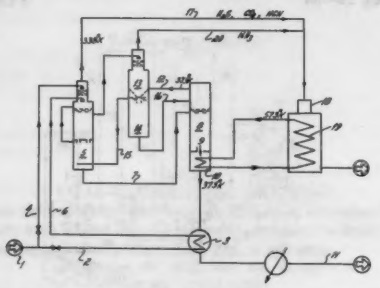
Int. Cl.³ B01D *19/00*

U.S. Cl. 55—48 **18 Claims**

1. A process for separating dissolved gaseous constituents from an aqueous solution containing acid gases and ammonia, said process comprising the steps of directly contacting said

aqueous solution with drops of hot light heating oil immiscible in said solution to separate said acid gases from said solution to form a treated solution, introducing steam into said treated solution to separate out ammonia and to form an ammonia-water vapor, and cooling said vapor with the oil from the acid separation step to condense the water component of said vapor.

8. A process for separating dissolved gaseous constituents from an aqueous solution containing acid gases and ammonia, said process comprising the steps of introducing said aqueous solution into a deacidifier, introducing drops of hot light heating oil into the bottom of said deacidifier, said oil flowing in an



upward direction through said aqueous solution to separate said acid gases from said solution, withdrawing the treated solution from said deacidifier, introducing said treated solution into an ammonia separator, introducing steam into said treated solution in said ammonia separator to separate out the residual ammonia, introducing the H_2O/NH_3 vapor issuing out of the ammonia separator into a vapor cooler, cooling said vapor by contacting it with cooled heating oil from said deacidifier in a top section of said vapor cooler, accumulating the condensate in a bottom section of said vapor cooler, said oil forming a layer on the top of said condensate, withdrawing said oil from said cooler, and withdrawing said condensate from said cooler.

4,352,681

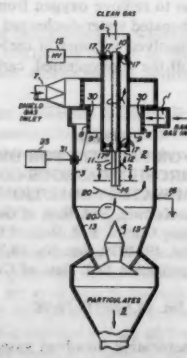
ELECTROSTATICALLY AUGMENTED CYCLONE APPARATUS

Peter W. Dietz, Delanson, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 195,174, Oct. 8, 1980, abandoned. This application Jul. 30, 1981, Ser. No. 288,706

Int. Cl.³ B03C *3/14*

U.S. Cl. 55—127 **4 Claims**



1. A reverse flow cyclone separator comprising a first swirl-inducing raw gas inlet, a radially inwardly disposed exhaust duct, a cyclonic separation zone disposed in flow communication intermediate said raw gas inlet and said exhaust duct and a means for producing a corona discharge in said cyclonic separtion zone wherein said corona discharge producing means comprises an electrode disposed substantially coaxially in said exhaust duct and having a corona producing portion extending out of said duct inlet into said cyclonic separation zone and first electrical means to enable the formation of a corona discharge between said corona producing portion and a wall of said cyclonic separation zone and further comprising a second swirl inducing inlet for substantially contaminant free gaseous medium, said second inlet including an inlet structure defining an introduction zone disposed radially inwardly from said raw gas inlet and radially outwardly of the inlet of said exhaust duct and second electrical means for forming a voltage gradient between said inlet structure and said wall of said cyclonic separation zone.

4,352,682

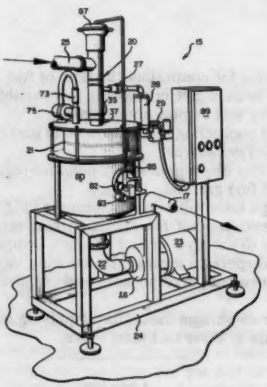
DEOXYGENATING APPARATUS

David M. Kemp, Jr., Naperville, and Hartl R. Jones, Bensenville both of Ill., assignors to FMC Corporation, Chicago, Ill.

Filed Nov. 13, 1980, Ser. No. 206,455

Int. Cl.³ B01D *19/00*

U.S. Cl. 55—165 **9 Claims**



1. A gas exchange deoxygenating unit, comprising, in combination, a tubular conduit forming a hollow discrete mixing chamber having an upstream water inlet pipe adapted to receive oxygen-containing water from a remote source, a gas inlet located downstream of the water inlet and adapted to receive a stripping gas from a remote source, a gas flow meter between said remote gas source and said gas inlet, said gas inlet being positioned to inject the stripping gas directly into the water in the mixing chamber, valve means operable to cause said stripping gas to be introduced into said mixing chamber at a positive gas pressure to provide a turbulent water and gas flow within the mixing chamber, and a mixing chamber outlet downstream of the water inlet and gas inlet, the chamber containing a quantity of insoluble reticulated material to further encourage said turbulent water and gas flow and intimate water and gas intermixing in the mixing chamber, the deoxygenating unit further including a discrete hollow deoxygenating chamber having an upstream inlet in fluid communication with the mixing chamber water outlet and comprising a deoxygenating chamber inlet for receiving the combined and mixed water and stripping gas from the mixing chamber outlet, a plurality of foraminous members mounted at spaced apart locations in the deoxygenating chamber and adapted to intercept and cause intermixing of the water and stripping gas, each member having a plurality of orifices extending therethrough,

a deoxygenating chamber water outlet, a deoxygenating chamber gas outlet, exhaust means for expelling gas from the deoxygenating chamber through the deoxygenating chamber gas outlet, a water collecting basin connected to said water outlet, a pump for withdrawing the deoxygenated water from said basin, and means responsive to the water level within said basin for controlling the flow of water from said inlet pipe to said mixing chamber.

4,352,683

APPARATUS FOR VENTING AND DEAERATING FROM A LIQUID CIRCUIT

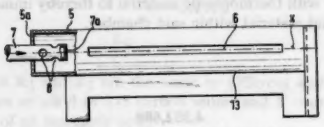
Hans Vogel, Nuremburg, Fed. Rep. of Germany, assignor to MAN Maschinenfabrik Augsburg-Nuernberg AG, Nuremberg, Fed. Rep. of Germany

Filed Jan. 21, 1981, Ser. No. 226,795

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1980, 3002578

Int. Cl.³ B01D *19/00*

U.S. Cl. 55—192 **9 Claims**



1. Apparatus for degassing a liquid circuit, particularly the cooling circuit of an internal combustion engine, comprising

a surge tank having a lower liquid-side part and an upper gas-side part;

inlet means for admitting a gas-containing liquid into said surge tank under pressure;

outlet means for discharging degassed liquid from said surge tank; and

means for depressurizing and degassing the admitted liquid, comprising an at least generally horizontal expansion tube of predetermined diameter and having closed ends and a longitudinally extending large-area outlet, a liquid-inlet pipe of a diameter smaller than said predetermined diameter and having a closed but radially ported end portion extending through one of said ends and located within said tube and a baffle opposite to and spaced from said large-area outlet so that when gas-containing liquid admitted via said inlet pipe is discharged from said large-area outlet over the relatively large area of the outlet and impinges upon said baffle, even small gas bubbles will be liberated from the liquid to rise upwards in said gas-side port whereas the now degassed liquid is depressurized prior to its run-off over a surface of the baffle and into said liquid-side port.

4,352,684

FILTER BAG

Suresh D. Amberkar, Framingham, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Continuation of Ser. No. 127,294, Mar. 5, 1980, abandoned, which is a continuation of Ser. No. 846,658, Oct. 28, 1977, abandoned, which is a continuation-in-part of Ser. No. 607,540, Aug. 25, 1975, abandoned. This application Jul. 6, 1981, Ser. No. 280,397

Int. Cl.³ B01D *46/02*

U.S. Cl. 55—382 **7 Claims**

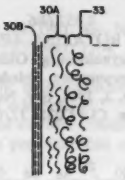
1. A filter bag comprising

a porous bag cover, and

a porous filter mass within said bag cover,

said filter mass being in the form of loosely lofted material which has a greater internal surface area than that of said bag cover, and

said loosely lofted material being puff expanded to completely fill said bag and having a density in the range from



about 75 grams per cubic foot to about 250 grams per cubic foot.

4,352,685

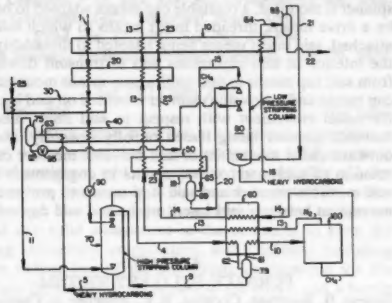
PROCESS FOR REMOVING NITROGEN FROM NATURAL GAS

Brian R. Swallow, Grand Island, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 24, 1981, Ser. No. 276,899

Int. Cl.³ F25J *3/02*

U.S. Cl. 62—28 **18 Claims**



1. A process for separating nitrogen from natural gas comprising:

(1) introducing an at least partially condensed nitrogen-containing natural gas feed stream which is essentially free of water and carbon dioxide and is at a pressure of at least 400 psia, to a first stripping column wherein the stream is separated by rectification into a nitrogen-methane gas stream A and a heavy hydrocarbon-methane liquid stream B;

(2) partially condensing stream A to produce a nitrogen-methane gas stream C and a liquid stream D;

(3) introducing stream D to said first stripping column;

(4) introducing stream C to a nitrogen-methane separation zone wherein the stream is separated into a nitrogen stream E and a methane stream F;

(5) partially vaporizing stream B to produce a gas stream G and a heavy hydrocarbon-enriched liquid stream H;

(6) introducing stream G to said first stripping column as vapor reflux;

(7) introducing stream H to a second stripping column wherein it is separated by rectification into a methane-rich stream I and a liquid stream J;

(8) partially condensing stream I to produce a methane gas stream K and a liquid stream L;

(9) introducing stream L to said second stripping column;

(10) partially vaporizing stream J to produce a gas stream M and a heavy hydrocarbon liquid stream N;

(11) introducing stream M to said second stripping column as vapor reflux; and

(12) recovering stream F and stream K as product methane.

4,352,686

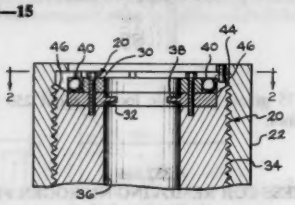
SPINNER ROTATING APPARATUS

E. Eugene Crosby, Reynoldsburg, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Nov. 2, 1981, Ser. No. 317,095

Int. Cl.³ C03D 37/04

U.S. Cl. 65—15 8 Claims



5. Apparatus for manufacturing mineral fibers from molten material comprising a spinner having orificed peripheral walls, said spinner being adapted to receive and to centrifuge molten mineral material into mineral fibers, a quill upon which said spinner is mounted, a rotatable cap means adapted to be rotated by a drive means, threaded insert means to which said quill is attached, said insert means being adapted to threadably engage the interior of said cap means and to transmit driving force from said cap means to said quill, a stop means mounted on said cap means and a movable member mounted on said inert means for radial movement with respect to said insert means, said movable member being biased radially inwardly, and where outward radial movement of said movable member caused by rotation of said insert means results in engagement between said movable member and said stop means to prevent relative movement between said insert means and said cap means.

4,352,687

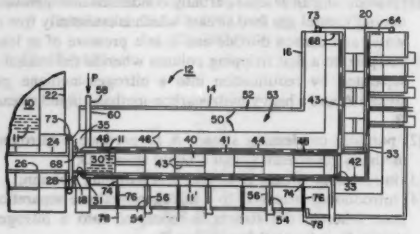
FURNACE DELIVERY SYSTEM

George B. Boettner, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Mar. 16, 1981, Ser. No. 244,022

Int. Cl.³ C03B 5/23

U.S. Cl. 65—134 27 Claims



1. A delivery apparatus for a furnace for conditioning a supply of relatively hot molten thermoplastic material contained within said furnace and supplied at an outlet thereof by controlled dissipation of heat energy therefrom comprising: a pipe having an inlet coupled to the furnace outlet for receiving said thermoplastic material therefrom and delivering the same to a desired location from an outlet thereof and conditioning the material to a desired homogeneity and temperature upon delivery; a refractory structure located in spaced relation about said pipe forming a space between an exterior of the pipe and the refractory structure and defining a chamber which surrounds said pipe and extends between said pipe and said structure, and heater means located in the chamber proximate the pipe for supplying heat thereto, said chamber having an opening in communication with the supply of thermoplastic material in at least one of the pipe and the furnace so as to receive therefrom a portion of the supply of thermoplastic material to thereby immerse the pipe and heater means therein.

20. A method of conditioning a supply of thermosplastic material existing at virtually any condition between a solid relatively cold condition and a molten relatively hot condition comprising the steps of: confining the material to a selected flow path, conducting the material along the flow path from an inlet end to an outlet end thereof, regulating the rate of heat energy dissipation from the material along said flow path including the step of at least one of heating said material and heat exchanging and removing heat energy given up by said material along said path, forming a concentric annular chamber surrounding the flow path, said chamber having wall portions in spaced relation with said flow path, said wall portions defining a space within said chamber, and communicating the supply of the material into the chamber for surrounding the flow path with thermoplastic material to thereby immerse the same in said material within said chamber.

4,352,688

NITROGEN FERTILIZERS

Louis E. Ott, Oswego, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Nov. 2, 1978, Ser. No. 956,913

Int. Cl.³ C05G 3/00

U.S. Cl. 71—11 8 Claims

1. A method of fertilizing soil consisting of applying an effective amount of ammonia and ammonium acetate to said soil, wherein the mole ratio of ammonia to acetate ion is from about 50 to about 50,000.

7. A method of treating soil which comprises applying to said soil a source of available nitrogen and at least one alkanoate anion in the form of a salt which is selected from the group consisting of the ammonium and metal salts of an alkanoic acid containing from 2 to 6 carbon atoms; wherein said metal is selected from the group consisting of lithium, sodium, potassium and calcium; said nitrogen source is selected from the group consisting of ammonium nitrate, ammonium sulfate, sodium nitrate, calcium nitrate, calcium cyanamide, urea, ammonium phosphate, ammonium polyphosphate and mixtures thereof; and the mole ratio of said nitrogen source to said alkanoate anion is from about 600 to about 50,000.

4,352,689

METHOD FOR CONTROLLING APICAL DOMINANCE

Charles D. Fritz, Hatfield, Pa.; Wilbur F. Evans, Kuala Lumpur, Malaysia, and Anson R. Cooke, Hatfield, Pa., assignors to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 869,386, Oct. 24, 1969, which is a continuation-in-part of Ser. No. 693,698, Dec. 27, 1967, abandoned, which is a continuation-in-part of Ser. No. 617,860, Feb. 23, 1967, abandoned. This application Jan. 28, 1972, Ser. No. 221,817

The portion of the term of this patent subsequent to Apr. 22, 1992, has been disclaimed.

Int. Cl.³ A01N 57/00

U.S. Cl. 71—86 1 Claim

1. A method for controlling apical dominance which comprises applying to the plant an effective amount, ranging between about 0.1 lb. and about 16 lbs. per acre of plants being treated, of 2-chloroethylphosphonic acid.

4,352,690

ACID GOLD BATH FOR THE ELECTROLESS DEPOSITION OF GOLD

Manfred Dettke, and Ludwig Stein, both of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

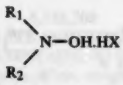
Filed Jul. 17, 1980, Ser. No. 284,450

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1980, 3029785

Int. Cl.³ C23C 3/02

U.S. Cl. 106—1.23 7 Claims

1. In a stabilized aqueous, acidic gold plating bath for the electroless deposition of gold on gold and metals that are more electronegative than gold and alloys thereof containing a dicyanogold(I)-complex, a complex former and a reducing agent; the improvement comprising a stabilizer selected form the group consisting of an alkali metal fluoride and an alkali metal hydrogen fluoride and, as reducing agent, a hydroxyl amine derivative having the formula



in which R_1 and R_2 are the same or different and represent hydrogen or alkyl of 1–5 carbon atoms and X represents the residue of an inorganic acid.

4,352,691

LIQUID INK FOR PRINTERS

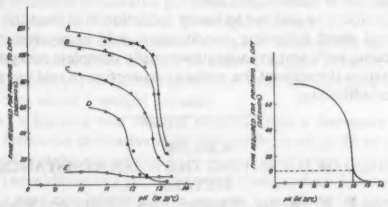
Akio Owatari, and Yuki Yamada, both of Shiojiri, Japan, assignors to Shinshu Seiki Kabushiki Kaisha, Nagano, Japan

Filed Oct. 16, 1980, Ser. No. 197,731

Claims priority, application Japan, Oct. 17, 1979, 54-133824

Int. Cl.³ C09D 11/02

U.S. Cl. 106—20 11 Claims



1. A liquid ink composition including an effective amount of a component capable of dissolving at least one of a fibrous material, sizing material and a surface treatment material present in a recording medium to permit the ink to penetrate the recording medium, comprising:

a water-soluble dye;

a wetting agent selected from the group consisting of aliphatic polyhydric alcohols, alkylether derivatives of aliphatic polyhydric alcohols, acetate derivatives of aliphatic polyhydric alcohols and mixtures thereof;

at least one strong basic alkali metal hydroxide; and

water; the composition having a pH between about 12 and 14 at 20° C.

4,352,692

MODIFIED VEGETABLE PROTEIN ADHESIVE BINDER

Thomas L. Krinski, Granite City, Ill., and Carroll L. Garey, St. Louis, Mo., assignors to Ralston Purina Company, St. Louis, Mo.

Filed Mar. 16, 1981, Ser. No. 244,439

Int. Cl.³ C09D 1/04, 3/02

U.S. Cl. 106—79 34 Claims

13. A process for the production of a modified vegetable protein alkaline binder comprising:

a. forming a slurry of a urease containing vegetable protein material having a proteinaceous solids content of 10 to 30% by weight;

b. adding to said slurry a water soluble silicate in amounts effective to reduce foaming during reaction of the protein material and sufficient urea to react with the urease and provide a pH for the slurry above about 8,

c. reacting said slurry with an oxidizing agent in an amount and for a time sufficient to improve the rheological properties by lowering the viscosity of the protein material;

d. heating said reacted slurry to a temperature of between about 220° to 320° F. for between about 90–150 seconds.

4,352,693

CAPSULES CONTAINING CEMENTITIOUS COMPOSITIONS

Michael Langdon, P.O. Box 329, 162 Drakensberg Rd., Rondebult, Germiston 1423, Transvaal, South Africa

Filed Jan. 27, 1981, Ser. No. 228,854

Claims priority, application United Kingdom, Jan. 29, 1980, 8002941

Int. Cl.³ C04B 7/32

U.S. Cl. 106—104 19 Claims

1. An anchoring capsule for use in anchoring, comprising a container, a dry self-setting water activatable solid composition in said container, said container having a plurality of holes whereby when the capsule is immersed in water the water passes through the holes into the container there to interact with said dry solid component in the container to form the anchoring self-setting composition, said container including means to reduce loss of the self-setting composition via the holes when the capsule is immersed in the water, and wherein the dry self-setting composition in said container is a cementitious mixture comprising a high alumina cement, said dry self-setting composition including both an organic acid component selected from the group consisting of hydroxy carboxylic acids and alkali metal salts and esters thereof, and at least one water soluble lithium derivative, said organic acid component and said lithium derivative being present in substantially equal proportions by weight, and in which there is a concentration of 0.05 parts of the lithium derivative to 100 parts of dry self-setting composition which is sufficient to cause the self-setting composition to achieve a high early strength in the form of a controlled initial setting time followed by a final setting time to give a final strength similar to the high initial strength whereby an element may be anchored in the set anchoring composition.

4,352,694

PROCESS OF PRODUCING SOREL CEMENT

Robert Smith-Johannsen, Incline Village, Nev., assignor to Norcem A.S., Oslo, Norway

Continuation-in-part of Ser. No. 169,984, Jul. 18, 1980, abandoned. This application Oct. 31, 1980, Ser. No. 202,691

Int. Cl.³ C04B 9/02

U.S. Cl. 106—106 5 Claims

1. A process for producing magnesium oxide hydrate cements which comprises forming a premix containing water and part of the magnesium oxide to be used to form the hydrate and in which the magnesium oxide is at least initially substantially unreactive with magnesium chloride hydrate, mixing the premix with the magnesium chloride hydrate and the remainder of the magnesium oxide in the reactive state, and curing the

resulting composition, said unreactive magnesium oxide being capable of slowly reacting with the magnesium chloride hydrate after the initial reaction of the reactive magnesium oxide with the magnesium chloride hydrate.

4,352,695

NOVEL GELATINS, PROCESSES FOR THEIR PREPARATION AND THEIR USE

Ivan Tomka, Bourguillon, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Sep. 5, 1980, Ser. No. 184,568

Claims priority, application Switzerland, Sep. 17, 1979, 8382/79

Int. Cl.³ C09D *3/04;* C09H *11/00*

U.S. Cl. 106—135 16 Claims

1. A process for the preparation of gelatin with a high setting speed of solidification and reduced viscosity by lowering its microgel content without at the same time substantially increasing its peptide content, which comprises subjecting an aqueous gelatin solution to the action of mechanical shearing forces, the shear stress being between 10^4 and 10^8 Pascal.

4,352,696

PROCESS AND COMPOSITION

Richard A. Prather, Houston, Tex., assignor to The Upjohn Company, Kalamazoo, Mich.

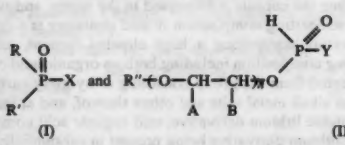
Filed Mar. 30, 1981, Ser. No. 248,804

Int. Cl.³ C08L *1/00*

U.S. Cl. 106—163 R 17 Claims

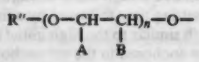
1. In a process for the preparation of particle board wherein particles of material capable of being compacted are contacted with a polyisocyanate composition and the treated particles are subsequently formed into boards by the application of heat and pressure, the improvement which comprises contacting said particles, in addition to the treatment with said polyisocyanate composition, with from about 0.1 to about 20 parts, per 100 parts by weight of said polyisocyanate, of a compound selected from the class consisting of:

(a) compounds having the formulae:



(I) (II)

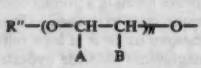
wherein R is hydrocarbyl; R' is selected from the group consisting of hydrocarbyl, alkoxy, hydroxyl and



wherein R'' is selected from the group consisting of alkyl and aryl, one of A and B represents hydrogen and the other is selected from the class consisting of hydrogen, methyl, chloromethyl and 2,2,2-trichloroethyl, and n is a number having an average value from 1 to 25;

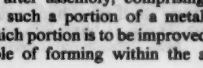
R and R' taken together represent alkylene having 3 to 5 carbon atoms in the chain separating the valencies;

X is selected from the group consisting of hydroxy, halo, acyloxy, hydrocarbylamino, and



wherein R'', A, B, and n are as defined above; and

Y represents a member selected from the group consisting of halo and



(b) metal, ammonium and organic amine salts of the acids of formula (I) wherein R' and or X represents hydroxyl.

4,352,697

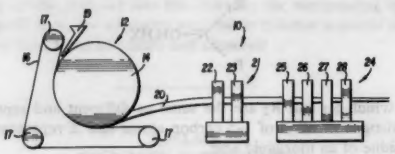
METHOD OF HOT-FORMING METALS PRONE TO CRACK DURING ROLLING

Ronald D. Adams, and E. Henry Chia, both of Carrollton, Ga., assignors to Southwire Company, Carrollton, Ga.

Filed Oct. 1, 1979, Ser. No. 80,368

Int. Cl.³ C22F *1/08*

U.S. Cl. 148—2 7 Claims



1. A method for hot rolling, directly inline with a continuous caster, a continuous bar of high impurity copper without cracking said bar during heavy reduction from the predominately as cast condition, comprising:

(a) providing as a starting material, a molten flow of high impurity copper; then

(b) continuously casting said molten flow into a continuous bar and directing the advancing solidified bar to an inline continuous hot rolling mill, said bar being in the as cast condition and at a hot-forming temperature; then

(c) conditioning said bar immediately precedent to subjecting said bar to heavy reduction in said rolling mill, said conditioning being characterized in that said bar is preliminarily subjected to light reduction sufficient to cause recrystallization in a relatively thin surface shell within said bar but otherwise leaving said bar in a predominately as cast condition; and then

(d) subjecting said bar to heavy reduction in at least the first roll stand following conditioning, said heavy reduction being sufficient to cause substantially complete recrystallization throughout the entire cross-section of said bar after conditioning.

4,352,698

METHOD OF IMPROVING THE WEAR RESISTANCE OF METALS

Nicholas E. W. Hartley, Wantage; Alan Wilcockson, Newbury, both of England; David M. Sutherland, deceased, late of Wembley, England, and by The Midland Bank Trust Company Limited, legal representative, London, England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Dec. 2, 1980, Ser. No. 212,340

Claims priority, application United Kingdom, Dec. 3, 1979, 7941579

Int. Cl.³ C21D *1/09*

U.S. Cl. 148—4 10 Claims

1. A process for improving the wear resistance of a surface portion of a metal article which is to be subject to contact with another article after assembly, comprising the operation of implanting into such a portion of a metal article, the wear resistance of which portion is to be improved, ions of a material which is capable of forming within the article oxide com-

pounds having a perovskite or spinel type structure, and terminating the implantation of the ions when a dose of at least 10^{15} ions per square centimeter has been implanted and the wear resistance of said portion has been materially improved.

4,352,699
CO-NITRATING TRIMETHOLETHANE AND DIETHYLENE GLYCOL

Edward H. Zeigler, Jr., Budd Lake, N.J., assignor to Hercules Incorporated, Wilmington, Del.

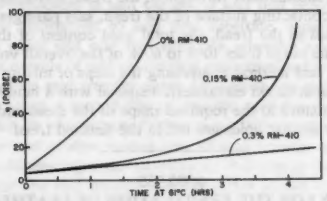
Filed Jun. 1, 1981, Ser. No. 269,154
Int. Cl.³ D03D *23/00, 43/00*
U.S. Cl. 149—109.6 **3 Claims**

1. In a process of co-nitrating a mixture of trimethylolethane and diethylene glycol with a mixture of sulfuric and nitric acids, the improvement of using an excess of between about 65 to about 100% by weight of nitric acid above the stoichiometric requirement for the co-nitration.

4,352,700
CURE RATE INHIBITORS FOR FERROCENE-CONTAINING PROPELLANTS

Richard E. Hoffman, Sandy, Utah, assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 19, 1980, Ser. No. 218,400
Int. Cl.³ C06B *45/10*
U.S. Cl. 149—19.2 **4 Claims**



1. A composite propellant composition containing a phosphate acid diester which functions as a cure-rate inhibitor to thereby increase the pot life of said composite propellant containing ferrocene or ferrocene derivatives, said composite propellant composition comprising:

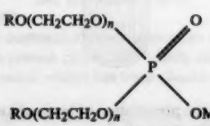
(i) hydroxyl terminated polybutadiene binder in an amount from about 52 to about 60 weight percent;

(ii) isophorone diisocyanate curing and crosslinking agent in an amount from about 2 to about 5 weight percent;

(iii) isodecyl pelargonate plasticizer in an amount from about 5 to about 7 weight percent;

(iv) a burning rate catalyst selected from a ferrocene or a ferrocene derivative in an amount from about 28 to about 41 weight percent; and

(v) an additive of a phosphate acid diester which functions as a cure-rate inhibitor in an amount from about 0.3 to about 2.5 weight percent, said phosphate acid diester having the formula:

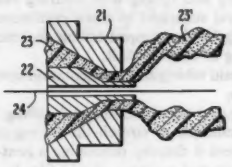


wherein n equals the average number from about 1 to about 10 moles ethylene oxide reacted with one mole hydrophobe, R equals alkyl or alkylaryl radical, and M equals hydrogen or an alkali metal selected from sodium and potassium.

4,352,701
PROCESS FOR THE PRODUCTION OF HIGHLY EXPANDED POLYOLEFIN INSULATED WIRES AND CABLES

Hiroshi Shimba; Fumio Suzuki, and Masao Yuto, all of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 858,752, Dec. 8, 1977, abandoned, which is a continuation of Ser. No. 661,876, Feb. 27, 1976, abandoned, which is a division of Ser. No. 420,486, Nov. 30, 1973, abandoned. This application Apr. 25, 1980, Ser. No. 143,684
Claims priority, application Japan, Aug. 21, 1973, 48-92939; Sep. 21, 1973, 48-102212
Int. Cl.³ H01B *7/02*
U.S. Cl. 156—51 **33 Claims**



19. In a process for producing a highly expanded polyolefin cable of excellent high frequency characteristics comprising the steps of feeding a polyolefin, a nucleating agent and a blowing agent to an extruder wherein the blowing agent is fed into the polyolefin as in a conventional swelling process or a conventional injection process and then heat extruding the resulting mixture through the extruder onto an inner conductor passing through the extruder to cover the outer periphery of the inner conductor, thereby forming an insulation layer of a highly expanded polyolefin foam, the improvement which includes the step of uniformly applying a polyolefin adhesive layer ónto the inner conductor which is a metallic conductor to thereby increase the adhesive strength between the highly expanded polyolefin insulation layer, which consists essentially of polyolefin, and the inner conductor prior to forming the highly expanded polyolefin insulation layer having a foaming ratio in excess of 2.5 times (60% expansion degree) on the adhesive layer on the inner conductor, which includes the step of, after extruding the foaming polyolefin mixture around said inner conductor having coated thereon the adhesive layer, sizing the outer surface of said foaming polyolefin layer on said inner conductor by means of a sizing die to provide a highly expanded uniform polyolefin insulation layer of a predetermined size, said sizing die having a cross-sectional area less than that of the freely expanded polyolefin foam at normal atmospheric pressure, whereby said foam is prevented from undergoing free foaming in the sizing die to provide tight adhesion of said insulation layer on said inner conductor due to the absence of a space between said polyolefin foam insulation layer and said adhesive layer on the inner conductor wherein the temperature of the sizing die is lower than the temperature of the extruded polyolefin foam, and wherein said blowing agent is a volatile liquid which provides a lubricating effect to the extruded foam insulation being sized.

20. The process as claimed in claim 18, further comprising the application of an outer conductor to said highly expanded uniform polyolefin insulation layer after said sizing, said outer conductor being provided after providing an adhesive layer between said outer conductor and said highly expanded uniform polyolefin insulation layer after sizing.

4,352,702

METHOD OF MAKING A THERMOPLASTIC RECEPTACLE HAVING IMPROVED HIGH TEMPERATURE SEAL

Norman D. Bornstein, Spartanburg, S.C., assignor to W. R. Grace & Co., Duncan, S.C.

Filed Sep. 22, 1980, Ser. No. 189,459
Int. Cl.³ B29C *27/02*; B29D *23/04*; B32B *31/28*
U.S. Cl. 156—84 6 Claims

1. A process for forming a heat shrinkable, flexible, thermoplastic receptacle having a gas barrier layer wherein food products or the like can be raised to pasteurizing temperatures comprising the steps of:

(a) coextruding a tubular multi-layer film comprising a layer of hydrolyzed ethylene-vinyl acetate copolymer and an interior surface layer of a polyolefin which is cross-linkable by ionizing radiation, the layers of said multi-layer film being directly melt joined without an adhesive disposed therebetween;

(b) irradiating said tubing with ionizing radiation to a first dosage level sufficient to allow continuous processing of said tubing by the trapped bubble technique, said dosage level being at least 0.5 MR;

(c) heating said tubing to the orientation temperature of said polyolefin;

(d) inflating and then cooling said tubing by the trapped bubble technique to stretch the tubing to film thickness and to orient it thereby producing a heat-shrinkable film;

(e) sealing selected portions of said film to itself using heat and pressure and severing selected portions of said film to form a heat shrinkable receptacle having an opening; and,

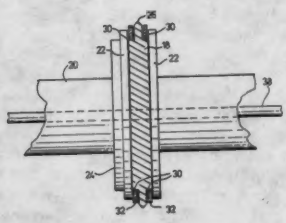
(f) irradiating the entire receptacle to impart a second and higher dosage level, said second dosage being at least 0.5 MR thereby producing a heat shrinkable receptacle in which a food product can be pasteurized.

4,352,703

FREE-SPINNING EMBOSSERS

Reginald F. Perron, Chambly, Canada, assignor to Hubscher Ribbon Corporation Limited, Montreal, Canada

Filed Oct. 6, 1980, Ser. No. 194,526
Int. Cl.³ D03D *47/50*
U.S. Cl. 156—88 7 Claims



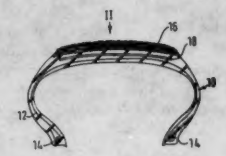
1. A method of producing ribbons with embossed side edges from a length of thermoplastic material, comprising pulling said length of material through a cutting station having a plurality of side-by-side circular knives mounted for rotation about an axis substantially parallel to the plane of the material at the cutting station and substantially perpendicular to the direction of travel of the material through the cutting station, each circular knife having a peripheral cutting edge, drivingly rotating and heating the circular knives while the material is being pulled through the cutting station to cause the cutting knives to cut the material into a series of ribbons, and providing heated circular embossing members on opposite sides of each circular knife which are freely rotatable relative to the associated circular knife to cause the embossing members to be rotated by contact with the material and to emboss the side edges of the ribbons.

4,352,704

METHOD OF MAKING POROUS TREAD

Arthur R. Williams, Birmingham, and Gareth T. Williams, Lichfield, both of England, assignors to Dunlop Limited, London, England

Division of Ser. No. 127,655, Mar. 6, 1980, Pat. No. 4,290,470. This application Jun. 9, 1981, Ser. No. 271,964
Claims priority, application United Kingdom, Mar. 16, 1979, 7909376
Int. Cl.³ B29G *7/02*; B60C *11/00*
U.S. Cl. 156—125 17 Claims



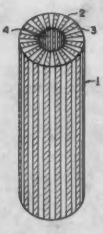
1. A method of manufacturing a tire tread having an assembly of numerous discrete particles of vulcanized elastomeric material bonded together to form a cohesive non-solid mass with adjacent particles bonded together only at separated portions thereof, and intermediate said bonded portions, the particles being spaced-apart to provide passages which are randomly distributed and randomly orientated, said passages extending substantially throughout the tread, including from a highway-contacting surface of the tread, said passages constituting voids in the tread, the total void content of the tread being in the range from 10% to 60% of the overall volume of the tread, said method comprising the steps of mixing prevulcanized particulated elastomeric material with a binder, shaping said mixture to the required shape of the tread and curing the binder so that voids are left in the finished tread.

4,352,705

PROCESS FOR THE PREPARATION OF LEATHERLIKE SHEET MATERIALS

Kiyotaka Ozaki; Michikage Matsui, both of Ibaraki, and Norihiro Minemura, Takatsuki, all of Japan, assignors to Teijin Limited, Osaka, Japan

Continuation-in-part of Ser. No. 129,310, Mar. 11, 1980, abandoned, which is a continuation of Ser. No. 934,784, Aug. 18, 1978, abandoned. This application Jul. 2, 1981, Ser. No. 279,871
Claims priority, application Japan, Sep. 6, 1977, 52-106290; Sep. 6, 1977, 52-106291; Sep. 6, 1977, 52-106292
Int. Cl.³ B32B *5/02*
U.S. Cl. 156—155 14 Claims



1. A process for the preparation of leatherlike sheet materials which comprises the steps of:

(1) preparing hollow composite fibers, each composed of 32 to 72 alternately arranged segments of polyester or polyamide and polystyrene which are mutually adhered side-by-side and encompass a hollow space, and which extend along the longitudinal axis of the fiber to form a tubular

body, said hollow composite fiber having a denier of 1 to 20, and said each segment having a denier of 0.01 to 0.5, the ratio of the total weight of the polyester or polyamide segments to that of the polystyrene segments in the hollow composite fiber being in the range of between 50:50 and 70:30 and the hollow ratio of the hollow composite fiber being between 2 and 15% by volume;

(2) forming a fabric using thus prepared hollow composite fibers;

(3) removing the polystyrene segments with a solvent thereof from the hollow composite fibers; and

(4) applying an elastic polymer to the fabric.

4,352,706

PROCESS FOR APPLYING A METALLIC IMAGE IN REGISTER TO A DOCUMENT OF VALUE

Lee H. Miller, 900 Park Ave., New York, N.Y. 10021

Filed Aug. 31, 1981, Ser. No. 298,090
Int. Cl.³ B44C *1/00*
U.S. Cl. 156—233 **3 Claims**

1. A process for preventing the counterfeiting of a valuable document, comprising the steps of, depositing, on a reusable transfer agent, a first film of metallic particles of the order of magnitude of substantially less than 1,000 Angstroms in thickness, coating a first predetermined area of said transfer agent with varnish, laminating said transfer agent and a first substrate together before said varnish is cured so that said metallic particles are embedded in said varnish at said first predetermined area and transferred to said first substrate, separating said transfer agent and said first substrate whereby said metallic particles outside of said coated first predetermined area remain deposited on said transfer agent, depositing, on said reusable transfer agent, a second film of metallic particles of the order of magnitude of substantially less than 1,000 Angstroms, coating a second predetermined area of said transfer agent with varnish, laminating a second substrate comprising the valuable document and said transfer agent together before said varnish is cured so that said metallic particles are embedded in said varnish at said second predetermined area and transferred to said second substrate, curing said varnish coating on said second predetermined area, separating said second substrate from said transfer agent whereby said second substrate is provided with at least one film of metallic particles at a first predetermined location and at least two films of metallic particles at a second predetermined location and cleaning said reusable transfer agent.

4,352,707

COMPOSITE REPAIR APPARATUS

Leonard M. Wengler, Sayville; Harold J. Wicker, Commack, and Michael J. Masica, Jr., Port Jefferson Station, all of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

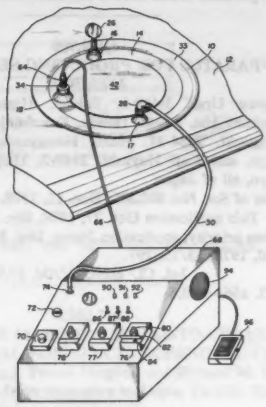
Filed Apr. 23, 1981, Ser. No. 256,699
Int. Cl.³ G05G *15/00*
U.S. Cl. 156—359 **7 Claims**

1. A portable composite repair apparatus comprising:

a flexible, non porous diaphragm which may be fitted over a composite patch which has been placed on a surface to be patched;

a plurality of resistive heating elements, each of said resistive heating elements being integrally formed within the diaphragm and having a surface power density corresponding to a maximum heat loss density of an area on the surface to be patched with which said resistive heating element registers; and

a like plurality of temperature control units, each of which may be adjusted to control a rate of temperature rise and



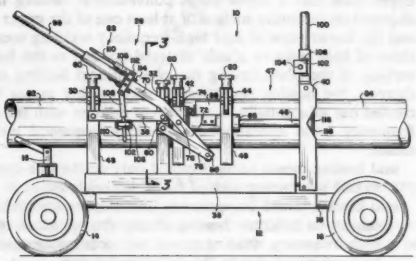
an ultimate curing temperature in an associated resistive heating element.

4,352,708

DEFINED FORCE FUSION MACHINE FOR JOINING PLASTIC PIPE

Arthur H. McElroy, P.O. Box 15580, Tulsa, Okla. 74112

Filed Sep. 8, 1980, Ser. No. 179,030
Int. Cl.³ B29C *27/12*; B32B *31/20*; F16L *47/02*
U.S. Cl. 156—378 **12 Claims**



1. An apparatus for fusing molten portions of pipe together comprising:

a support frame;

fixed clamp means on said support frame to retain a molten portion of said first section of pipe in a fixed axial position;

movable clamp means adapted to retain a molten portion of a second section of pipe axially spaced from said molten portion of said first section of pipe, said movable clamp means movably supported upon guide rods, said guide rods fixed to said support frame on each side of said pipe the axis of which lies in an imaginery plane which intersects the central axis of said molten portions of said first and second pipe sections;

means to move said clamp means bringing said molten pipe portions into contact for fusion; and

means in communication with said movable clamp means to indicate the force applied to said molten pipe portions when drawn together into contact for fusion.

12. In an apparatus for fusing molten portions of a first and a second pipe together, including means to move the portion of the first pipe relative to the portion of the second pipe, the

improvement comprising means in communication with said means to move to indicate the force being applied to said molten portions when drawn together into contact for fusion.

4,352,709

APPARATUS FOR PRODUCING SEAT CUSHION MEMBER

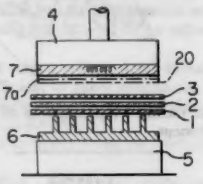
Muneharu Urai, 3-419-3, Takagi, Higashiyamato, Tokyo; Tadafumi Abe, 2-8-42, Honda, Kokubunji, Tokyo; Youichiro Haraguchi, 2054-11, Hane, Hamuramachi, Nishitamagun, Tokyo, and Koji Hayashi, 2149-2, Haijimacho, Akishima, Tokyo, all of Japan

Division of Ser. No. 102,399, Dec. 11, 1979, Pat. No. 4,313,776. This application Oct. 27, 1980, Ser. No. 203,401

Claims priority, application Japan, Dec. 14, 1978, 53/153621; Dec. 20, 1978, 53/156297

Int. Cl.³ B29C *27/04, 27/06*

U.S. Cl. 156—380.6 **1 Claim**



1. An apparatus for producing a seat cushion member by welding a sheet of surface material, a sheet of usual or untreated polyurethane foam material and a reinforcing web of fabric material into an integral structure, said apparatus comprising high-frequency welding means including a pair of an upper plate and a lower plate, conventional heating means disposed on the entire surface of at least one of the upper plate and the lower plate of said high-frequency welding means, a sheet of heat resistive elastic material bonded to the heating surface of the plate having the conventional heating means thereon, the heating operation of said heating means being carried out substantially in concurrent relation with the high-frequency weld operation of said high-frequency welding means;

said heating means being disposed only on the side opposite to said reinforcing web of fabric material; and

said heating means comprises an insulator member which is subject to dielectric heating during the operation of said high-frequency welding means and accumulates internal heat generated due to the dielectric heating.

4,352,710

HAND-HELD LABELER

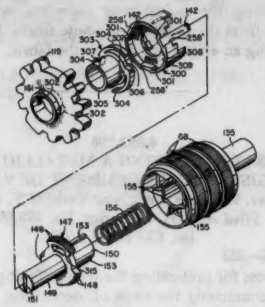
James A. Makley, Miamisburg, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Jun. 11, 1981, Ser. No. 272,795

Int. Cl.³ B32B *31/00*

U.S. Cl. 156—384 **10 Claims**

1. In a hand-held apparatus for printing and applying labels releasably secured by pressure sensitive adhesive to a carrier web, and including a housing having a handle, means in the housing for printing on labels, means for delaminating printed labels from the carrier web, means for applying printed labels, a rotatably mounted feed wheel, the feed wheel having teeth at its periphery engageable with the carrier web for drawing the web about the delaminating means, means for moving the printing means and the feed wheel, the moving means including a ratchet wheel and a pawl member having a pawl cooperable with the ratchet wheel, first clutch means for enabling relative movement between the ratchet wheel and the feed wheel when unclutched to enable the registration of the label with respect to the printing means to be adjusted and for preventing relative movement between the ratchet wheel and the feed wheel when clutched to provide a drive connection between the ratchet wheel and the feed wheel during use of the apparatus, characterized in that the pawl member has a slidably mounted hub, means including second clutch means effective when the first clutch means is unclutched and having a first clutch member connected to the pawl member and a cooperable second clutch member connected to the ratchet wheel for



selectively clutching the pawl member and the ratchet wheel against relative rotational movement while the feed wheel is being rotated relative to the ratchet wheel, the pawl member being slidable in one direction relative to the ratchet wheel for clutching the pawl member and the ratchet wheel, and the pawl member being slidable in the opposite direction relative to the ratchet wheel for unclutching the pawl member and the ratchet wheel.

4,352,711

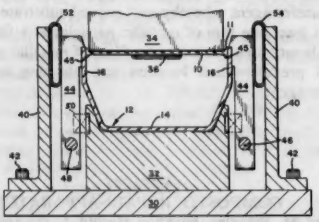
FRICTION WELDING APPARATUS

Leslie Toth, Brookfield, Conn., assignor to Branson Ultrasonics Corporation, Newton, Conn.

Filed Jun. 15, 1981, Ser. No. 273,628

Int. Cl.³ B29C *27/08*

U.S. Cl. 156—497 **8 Claims**



1. A friction welding apparatus for welding a thermoplastic reinforcing plate to a thermoplastic U-shaped channel, the latter including a base and two upstanding legs comprising:

first support means for supporting said channel;

second support means for supporting said plate within said channel in a manner to dispose each of the opposite lateral edges of said plate in abutting contact with a respective inside surface of each of said legs;

means for applying a force to the outside surface of each of said legs for causing each of said legs to be in forced abutting surface contact with said plate along said two opposite edges of said plate, and

means for causing said first and second support means to undergo relative linear reciprocating motion along an axis parallel to the longitudinal axis of said plate during a weld

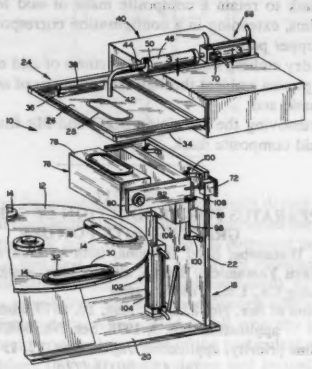
time interval for causing thermoplastic material along said respective abutting surface contacts to melt and upon cessation of said motion said molten material to rigidify whereby said plate becomes welded to said channel.

4,352,712

APPARATUS FOR APPLYING GASKET-FORMING MATERIAL TO WORKPIECES

William A. Paul, 2338 Townley Rd., Toledo, Ohio 43614

Continuation-in-part of Ser. No. 90,466, Nov. 1, 1979, Pat. No. 4,273,607. This application Jun. 10, 1981, Ser. No. 272,278
The portion of the term of this patent subsequent to Jun. 16, 1998, has been disclaimed.
Int. Cl.³ B44C 1/00
U.S. Cl. 156—540 14 Claims



1. Apparatus for applying a bead of gasket-forming material in a pattern of predetermined size and shape to a mateable surface of a workpiece, said apparatus comprising means for supporting the workpiece, a source of gasket-forming material, a supporting member, a transfer member rotatably supported by said supporting member, applicator means for applying gasket-forming material to said transfer member from said source in the shape of the bead to be applied to the mateable surface, means for moving said supporting member in a lineal path toward and away from said applicator means and said workpiece supporting means, and means mounted on said supporting member for moving said transfer member in an arcuate path from a position with the transfer surface facing toward the mateable surface of the workpiece when on said supporting means and a position with the transfer surface facing said applicator means.

4,352,713

VAPOR GROWTH METHOD

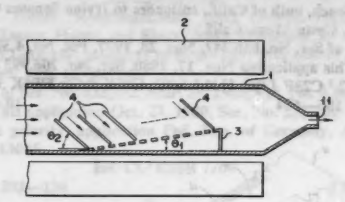
Shigeru Morita, Kawasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Nov. 7, 1980, Ser. No. 204,953
Claims priority, application Japan, Nov. 10, 1979, 54-145727
Int. Cl.³ C30B 25/12
U.S. Cl. 156—612 11 Claims

1. A method of forming a film on a plurality of substrates within a generally horizontal elongated reaction vessel having a central axis, an upstream inlet and a downstream outlet, comprising the steps of:

(a) arranging said substrates along said axis in a substantially parallel array, the planes of said substrates being at an angle to said axis with the upstream edge of each substrate being higher than the downstream edge of the same substrate, the upstream edge of each said substrates projecting higher into the gas flow a distance greater than the upstream edge of the preceding upstream substrate; and

(b) passing a reactive gas through said vessel at a reduced pressure along said axis from said inlet to said outlet, said



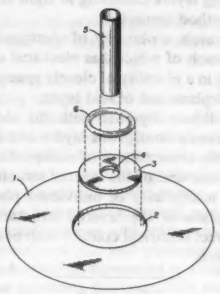
gas reacting with said substrates and forming a film thereon.

4,352,714

METHOD FOR MAKING A METAL-TO-CERAMIC INSULATOR SEAL FOR ELECTROCHEMICAL CELLS

Charlton A. Patterson, Parma Heights, and Richard M. Wilson, Medina, both of Ohio, assignors to Union Carbide Corporation, Danbury, Conn.

Filed Sep. 29, 1980, Ser. No. 192,018
Int. Cl.³ H01M 2/08; C03C 17/10, 29/00
U.S. Cl. 156—626 5 Claims



1. A method for making a metal/ceramic seal for electrochemical cells comprising the steps:

(a) plating the surface of a ceramic insulator having an opening disposed in the insulator with a metal that can be chemically removed;

(b) juxtaposing a metal elongated member at the opening of the metal-plated ceramic insulator such that the elongated member is to be metallurgically bonded within said opening and to said metal-plated ceramic insulator and juxtaposing the metal-plated ceramic insulator with a metal member to be metallurgically bonded together;

(c) placing a heat-fusible metal proximal the areas of the metal-plated ceramic insulator and metal elongated member and the metal-plated ceramic insulator and the metal member;

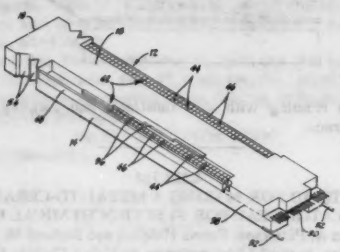
(d) heating the fusible metal above its melting point so as to cause the fusible metal to flow over the surface of the metal-plated ceramic insulator and be drawn by capillary action into the interfacial areas of the metal elongated member and the metal-plated ceramic insulator and the metal-plated ceramic insulator and the metal member; and

(e) chemically treating the components of step (d) to remove the plated metal from selected exposed surfaces on the ceramic insulator while not effectively weakening the metallurgical bonds between the metal elongated member and the metal-plated ceramic insulator and between the metal-plated ceramic insulator and the metal member.

4,352,715
DETECTOR ARRAY MODULE FABRICATION

John C. Carson, Corona Del Mar, and Paul F. Dahlgren, Newport Beach, both of Calif., assignors to Irvine Sensors Corporation, Costa Mesa, Calif.

Division of Ser. No. 855,242, Nov. 28, 1977, Pat. No. 4,304,624. This application Nov. 17, 1980, Ser. No. 206,993
Int. Cl.³ C23F *1/02*; H01J *5/02*; G06K *9/00*; H05K *3/06*
U.S. Cl. 156—634 10 Claims



1. That method of fabricating a photo-detector mosaic array module which has a focal plane at one end adapted to support and provide electrical connections to the photo-detectors in the mosaic array, and which comprises a plurality of electrical-circuit-supporting layers extending at right angles to the focal plane, which method comprises:

forming separately a plurality of electrical-circuit-supporting layers each of which has electrical circuitry thereon terminating in a plurality of closely spaced electrical leads at the focal plane end of said layer;

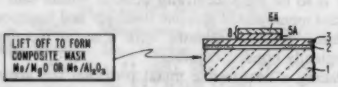
securing the layers together with the electrical circuitry located between contiguous layers and arranged to provide a mosaic array pattern of electrical contact points on the focal plane end of the layered structure; and

emplacing a multiplicity of individual photo-detectors on the focal plane of the layered structure, each detector being in direct electrical contact with one of the electrical contact points.

4,352,716
DRY ETCHING OF COPPER PATTERNS

Paul M. Schaible, and Geraldine C. Schwartz, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 24, 1980, Ser. No. 219,645
Int. Cl.³ C23F *1/02*
U.S. Cl. 156—643 34 Claims



1. A process for forming a copper based metal pattern comprising

depositing on a copper surface a composite mask formed by sequentially depositing of a diffusion barrier layer of molybdenum and an overlying layer selected from the group consisting of magnesium oxide (MgO) and aluminum oxide (Al_2O_3) extending in a pattern corresponding to the desired configuration of said copper pattern, with openings exposing complementary portions of said copper surface,

dry etch removal of said complementary portions of said copper through said mask openings, and

removing said composite mask.

23. A process for forming a patterned copper metallization on a substrate comprising:

(A) blanket coating said substrate with a copper first film,

(B) blanket coating said copper film with a diffusion barrier molybdenum second film,

(C) blanket coating second film with a third film selected from the group consisting of MgO and Al_2O_3 films,

(D) blanket coating said film with a resist fourth film,

(E) lithographically forming a mask from said resist having a pattern of openings complementary to the desired copper pattern,

(F) removing the portions of said MgO film and the underlying portions of said Mo film in said openings to expose the underlying portions of said copper film,

(G) removing the remaining portions of said resist of said mask to retain a composite mask of said Mo and MgO films, extending in a configuration corresponding to said copper pattern,

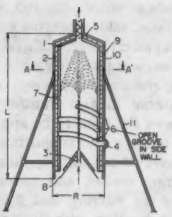
(H) dry etching said exposed portions of said copper film in a plasma ambient through said openings of said composite mask, and

(I) removing the remaining MgO and Mo film portions of said composite mask.

4,352,717
APPARATUS FOR PRODUCTION OF SPHERICAL GRAIN FERRITE POWDER

Yasuo Watanabe; Seizi Isoyama, both of Okayama, and Yoshikazu Yamamichi, Tokyo, all of Japan, assignors to Dowa Mining Co., Ltd., Tokyo, Japan

Division of Ser. No. 823,345, Aug. 10, 1977, abandoned. This application Jan. 3, 1978, Ser. No. 866,703
Claims priority, application Japan, Aug. 12, 1975, 50-97844
Int. Cl.³ B01D *1/18*
U.S. Cl. 159—4 E 3 Claims



1. Apparatus for the production of substantially spherical grain-ferrite powder which comprises:

a vertical cylindrical vessel having a lining of refractory material;

a hot air intake provided at the lower portion of the wall of said vertical vessel;

an exhaust vent provided at the top of said vertical vessel;

a spray nozzle provided in the center of the bottom of said vertical vessel and oriented to provide a continuous jetting feed of a ferrite powder suspension rising in the same direction as the axis of said vertical cylindrical vessel;

an open groove hot air guide provided along the inner surface of the wall of said vertical vessel, said open groove opening to the interior of said vertical vessel and extending upward in a spiral form starting from said hot air intake and toward said exhaust vent for providing a hot air current rising spirally upwardly within said vessel and around said sprayed suspension to produce a high temperature atmosphere above said spray nozzle for the formation of substantially spherical-grain ferrite particles from said sprayed suspension; and

an outlet at the lower end of said vessel for removal of said substantially spherical-grain ferrite particles.

4,352,718

METHOD FOR TREATING PARTICULATE MATERIAL

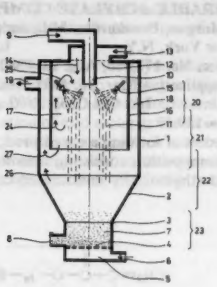
Gustav Grün, Ortesberg-Lissberg, Fed. Rep. of Germany, assignor to Claudius Peters AG, Fed. Rep. of Germany

Filed Feb. 23, 1981, Ser. No. 237,371

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1980, 3006861

Int. Cl.³ B01D *1/18*

U.S. Cl. 159—48 R 5 Claims



1. The method for moistening and subsequently drying particulate material comprising introducing gas entrained particulate material into a first zone, treating said gas entrained particulate material in said first zone with a spray of moisturizing liquid (while said particulate material is gas entrained), providing a free falling zone below said first zone through which said wetted particulate material is permitted to fall whereby penetration of the liquid into the interstices of the particulate material is accomplished, thereafter accumulating said treated particulate material in a fluidized bed zone positioned below said free falling zone, said particulate material being further treated by relatively high gas flow at the fluidized bed zone whereby said acccumulated particulate material is removed from the locus of said fluidized bed zone, said gaseous flow being adjusted whereby the gases have a relatively high partial pressure of the moisturizing liquid in the free falling zone and a lower partial pressure in the fluidized bed zone.

4,352,719

METHOD FOR PRODUCING COMBUSTION RESISTANT FIBROUS PRODUCTS

Alfons K. Herr, Stutensee, Fed. Rep. of Germany, assignor to Kataflox Patentverwaltungsgesellschaft mbH, Karlsruhe, Fed. Rep. of Germany

Filed Feb. 2, 1981, Ser. No. 230,506

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1980, 3003371; May 24, 1980, 3020033

Int. Cl.³ D21H *5/00*

U.S. Cl. 162—128 17 Claims

1. Method for producing a fire retardant or fireproof fibrous product, comprising:

(a) processing fibrous organic materials, fibrous inorganic materials or a mixture thereof into an aqueous slurry;

(b) intimately mixing with said slurry at least one boron-containing mineral which reacts with a mineral acid to form boric acid and at least one mineral acid to form boric acid;

(c) allowing the slurry, mineral and acid mixture to ripen;

(d) feeding said ripened mixture into a sheet forming and dewatering means to form a dewatered fibrous web; and

(e) drying said dewatered fibrous web to form said fibrous product.

4,352,720

PROCESS AND APPARATUS FOR THE PRODUCTION OF MOLDED METALLURGICAL COKE FROM COAL BRIQUETTES

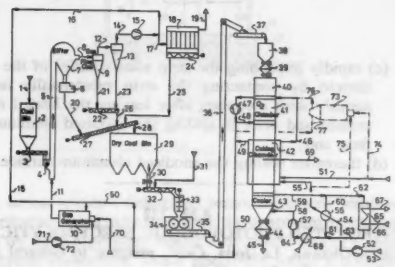
Heinrich Weber, Recklinghausen; Kurt Lorenz, Hattingen; Horst Dungs, Herne, and Klaus Urbye, Flaesheim, all of Fed. Rep. of Germany, assignors to Firma Carl Still GmbH & Co., KG, Fed. Rep. of Germany

Division of Ser. No. 135,112, Mar. 28, 1980, Pat. No. 4,305,788. This application Oct. 27, 1980, Ser. No. 201,262

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1979, 2913666

Int. Cl.³ C10B *1/04*

U.S. Cl. 202—124 3 Claims



1. A device for the production of molded metallurgical coke from dried coal or fine coal mixtures with a low swelling index, comprising:

means for forming briquettes;

a vertically extending reactor with a common jacket having an oxidation chamber adjacent the top thereof for receiving the briquettes, an indirectly heated vertical coking chamber directly below the oxidation chamber and a cooling chamber disposed directly below the coking chamber for directly cooling the briquettes using a cooling gas ;

means for circulating heating gases around said coking chamber and then upwardly across said coking chamber for indirect heating thereof, and into said oxidation chamber;

a top double air lock chamber connected to a top of said oxidation chamber for admitting the briquettes; and

a bottom double air lock chamber connected to a bottom of said cooling chamber for discharging briquettes;

said means for circulating heating gases operating to supply the heating gases from around said coking chamber to said oxidation chamber with an oxygen content of about 2% to 6% to surface oxidize the briquettes directly;

said coking chamber having an outlet for crude coke gas.

4,352,721

PROCESS FOR APPLYING DESIGNS TO ALUMINUM STRIP

Timothy A. Park, Derby, and Brian C. Turner, Bletchley, both of England, assignors to Ano-Coil Limited, Bletchley, England

Continuation of Ser. No. 14,567, Feb. 23, 1979, abandoned, which is a continuation of Ser. No. 811,125, Jun. 28, 1977, abandoned. This application Nov. 14, 1980, Ser. No. 208,168

Claims priority, application United Kingdom, Jun. 28, 1976, 26840/76

Int. Cl.³ C23F *5/00*; B41M *1/08, 1/28*

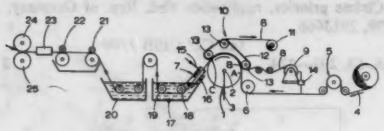
U.S. Cl. 204—35 N 14 Claims

1. A process for continuously printing anodised aluminum strip by transfer from a carrier web of a design in printing ink containing colored sublimable components, said process comprising:

(a) continuously feeding an unsealed, anodised aluminum strip to a moving surface heated to a temperature at which said colored components of the ink sublime and heating the strip by contact with the surface of said moving sur-

face in advance of its contact with the carrier web so that the aluminum is pre-heated before contact with the carrier web;

(b) feeding said carrier web into contact with the aluminum strip so that the printing ink is heated by contact with the anodised aluminum surface and colored components of the ink are caused to transfer from the carrier web to the aluminum strip;



(c) rapidly quenching the strip after transfer of the design thereto by contacting the strip substantially instantaneously with a coolant after leaving the heated moving surface and prior to sealing the anodised aluminum surface; and

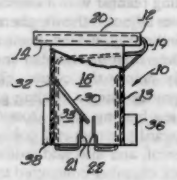
(d) thereafter sealing the anodised aluminum surface.

4,352,722

INTEGRATED PHOTOVOLTAIC ELECTROLYTIC CELL

Tihiro Ohkawa, La Jolla, Calif., assignor to General Atomic Company, San Diego, Calif.

Filed Mar. 12, 1981, Ser. No. 243,265
Int. Cl.³ C25B *1/04*
U.S. Cl. 204—129 **16 Claims**



1. A unit for producing hydrogen gas with solar energy, comprising:

flotation means to buoy said unit in an aqueous medium;

stabilization means to maintain a vertical orientation of said floating unit;

solar ray receiving means located at the top of said unit when said unit is floated which includes a plurality of interconnected photovoltaic cells, positioned to receive sun's rays and interconnected to produce electrical potential of at least about 1.4 volts;

a gas bubble collection chamber with means to admit therein the medium oriented below the surface of the medium when said unit floats therein;

an anode and a cathode; and

means respectively connecting said anode and said cathode to positive and negative terminals of said photovoltaic cells;

said cathode being positioned for contact with the aqueous medium at a location where hydrogen bubbles produced by the electrolysis of water resulting from the electrical potential created by said photovoltaic cells are trapped in said collection chamber.

13. A method for producing hydrogen gas from an aqueous medium comprising:

disposing a plurality of floatable photovoltaic-electrolysis units in an aqueous medium, each of which units includes a gas bubble collection chamber;

exposing said units to the sun's rays and collecting hydrogen created by electrolysis of water in said collection chambers;

gathering said units at a hydrogen harvesting facility, following collecton of at least a minimum desired amount of hydrogen in each unit, and

harvesting the hydrogen from said units.

4,352,723

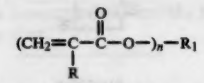
METHOD OF CURING A DUAL UV/THERMALLY CURABLE ACRYLATE COMPOSITION

Charles R. Morgan, Brookeville, Md., assignor to W. R. Grace & Co., New York, N.Y.

Division of Ser. No. 177,658, Aug. 13, 1980, Pat. No. 4,288,527.
This application Mar. 16, 1981, Ser. No. 244,441
Int. Cl.³ C25F *3/00*
U.S. Cl. 204—159.19 **3 Claims**

1. The process of forming a cured product which comprises admixing a composition consisting essentially of

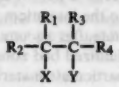
(1) a liquid ethylenically unsaturated compound of the formula:



wherein R is H or CH_3, R_1 is an organic moiety and n is 2 to 4,

(2) 0.0005 to 30% by weight of (1) of a photoinitiator, and

(3) 0.01 to 5% by weight of (1) of a substituted or unsubstituted pinacol of the general formula:



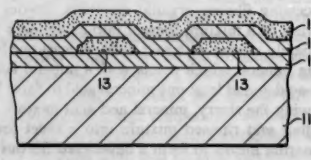
wherein R_1 and R_3 are members independently selected from the group consisting of substituted and unsubstituted aromatic radicals, R_2 and R_4 are members independently selected from the group consisting of substituted and unsubstituted aliphatic and aromatic radicals and X and Y are members independently selected from the group consisting of hydroxyl, alkoxy and aryloxy, exposing said composition to UV radiation having an intensity in the range 0.0004 to 60.0 watts/cm^2 in the 200–400 nanometer region and, thereafter, heating the composition to a temperature in the range 50°–250° C. for a time sufficient to obtain a cured solid product.

4,352,724

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE

Kenji Sugishima, and Tadakazu Takada, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 19, 1980, Ser. No. 208,391
Claims priority, application Japan, Nov. 28, 1979, 54-154003
Int. Cl.³ C23C *15/00*; C23F *1/00*
U.S. Cl. 204—192 E **36 Claims**



1. A method of manufacturing a semiconductor device with

a multi-layer structure on a semiconductor substrate to have a more uniform thickness of at least one of the layers, said method comprising the steps of

forming a masking film with a predetermined pattern on a selected one of said layers that is to be etched in forming said multi-layer structure,

isotropically etching each portion of said layer exposed by said pattern to a substantial depth of said selected layer with a respective etchant, leaving at least a lower part of each said exposed portion of said selected layer, said isotropic etching resulting in the removal of at least some of said selected layer underneath said masking film at the edges of said predetermined pattern, and

completing removal of said selected layer in an area of each said lower part by anisotropic etching so that the lower surface of said selected layer has said predetermined pattern, wherein the combination of said etchings result in the selected layer having said predetermined pattern with tapered edges.

18. The method of claim **1**, said anisotropic etching selectively comprising reactive ion etching and reactive sputter etching.

4,352,725

DRY ETCHING DEVICE COMPRISING AN ELECTRODE FOR CONTROLLING ETCH RATE

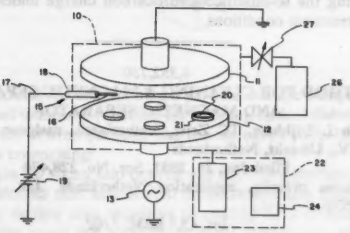
Tsutomu Tsukada, Fuchu, Japan, assignor to Anelva Corporation, Fuchu, Japan

Filed Dec. 12, 1980, Ser. No. 215,804

Claims priority, application Japan, Dec. 15, 1979, 54/162178

Int. Cl.³ C23C *15/00;* **C23F** *1/00*

U.S. Cl. 204—192 E **6 Claims**



1. A method of equalizing the etch rates in a device for dry etching a specimen by a use of a gas plasma, said method comprising the steps of:

(a) exhausting a chamber having spaced parallel electrodes contained in an enclosed hollow space within said chamber;

(b) placing at least one specimen to be etched on each of said electrodes, the etch rate of a specimen on one electrode differing considerably from the etch rate of a specimen on the other electrode;

(c) filling said space with a preselected reactive gas;

(d) applying an a.c. electric voltage of a predetermined frequency across said electrodes to develop said gas plasma in said gas-filled space, said gas plasma having a plasma potential dependent on the electric voltage applied across it and on said reactive gas; and

(e) controlling said plasma potential by applying an adjustable d.c. voltage to a control electrode member position in said hollow space between said first and said second electrodes, said control electrode being out of contact with said specimen, thereby equalizing the etch rates of specimens on both electrodes.

4,352,726

ION SELECTIVE FIELD-EFFECT SENSOR

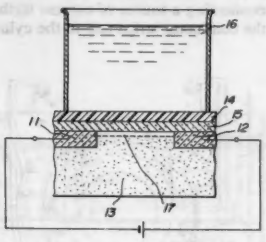
Takuo Sugano; Eiji Niki; Yoichi Okabe, and Tatsuo Akiyama, all of Tokyo, Japan, assignors to Takashi Mukaibo, Tokyo, Japan

Continuation of Ser. No. 20,686, Mar. 15, 1979, abandoned. This application Oct. 28, 1980, Ser. No. 201,637

Claims priority, application Japan, Sep. 14, 1978, 53-112339

Int. Cl.³ G01N *27/30*

U.S. Cl. 204—195 M **16 Claims**



1. In an ion selective field-effect sensor selectively sensitive to a particular cation to be measured, the improvement characterized by using a polymer having a structural unit of a giant heterocyclic compound, which selectively forms a complex with said particular cation, as an ion selective film provided on a surface of a field-effect semiconductor, wherein said polymer is between said giant heterocyclic compound and a member selected from the group consisting of vinyl polymers obtained by radical or ion polymerization of vinyl derivatives of the giant heterocyclic compound; vinyl copolymers obtained by radical or ion polymerization of such a vinyl derivative with a vinyl monomer; a polyamide polymer obtained by polycondensation of a diamino derivative of the giant heterocyclic compound with a dibasic acid halide; a polyester polymer obtained by polycondenstion of a dicarboxylic acid derivative of the giant heterocyclic compound with a glycol; a polyurea polymer obtained by addition polymerization of a diamino derivative of the giant heterocyclic compound with a diisocyanate; a polyurethane polymer obtained by addition polymerization of a diisocyanate derivative of the giant heterocyclic compound with a polyhydric alcohol, a polybasic acid or a polyvalent amine; an epoxy polymer obtained by the addition condensation of an amino derivative of the giant heterocyclic compound with a compound having in its molecule two or more epoxy groups; a polymer obtained by the addition polymerization of the giant heterocyclic compound which comprises an aromatic hydrocarbon group with formaldehyde, chloral or glutaric acid; and a polymer obtained by supporting the giant heterocyclic compound in polymer form by reacting an amino derivative of the giant heterocyclic compound with chloromethylated polystyrene or divinylbenzene crosslinked chloromethylated polystyrene.

4,352,727

ROTOGRAVURE CYLINDER PLATING AND DE-PLATING APPARATUS

Hubert Metzger, Milwaukee, Wis., assignor to Printing Machinery & Electronics Corporation, Inc., Milwaukee, Wis.

Continuation-in-part of Ser. No. 211,562, Dec. 1, 1980. This application Apr. 17, 1981, Ser. No. 255,281

The portion of the term of this patent subsequent to Oct. 5, 1999, has been disclaimed.

Int. Cl.³ C25D *17/00, 17/12*

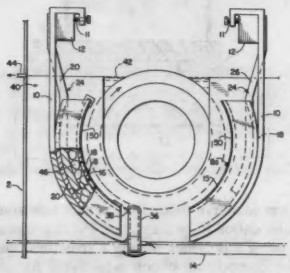
U.S. Cl. 204—212 **6 Claims**

1. Apparatus for electrolytic plating and deplating of rotogravure cylinders, comprising a tank adapted to contain a plating solution and including means for supporting therein a cylinder for rotation about a horizontal axis in one direction,

baskets disposed in said tank, one on each side of the cylinder, with concavo-convex arcuate inner perforate walls closely spaced from the cylinder and outer concavo-convex arcuate walls concentric with and spaced from the inner walls in the direction away from the cylinder, said baskets being of non-conductive material,

elongate metallic current-conductor strips, having upper protectively coated portions disposed above the baskets, and lower bare portions extending downwardly along inner sides of the outer basket walls, said lower portions being arcuate and concentric with the cylinder,

means for connecting a source of current to the upper portions of the conductor strips and to the cylinder,



nuggets of metal packed in said baskets between the lower portions of said conductor strips and the front walls of the baskets,

said baskets having tops disposed below the top of the cylinder, and supply and return means for maintaining plating solution in the tank with the level thereof below the top of the cylinder and above the tops of the baskets, and a sheet of porous plastic material covering the concave sides of the inner-perforate walls of the baskets and disposed between said inner sides of the baskets and the cylinder for preventing build-up of metal through the perforations of the inner basket walls when the cylinder is deplated.

4,352,728

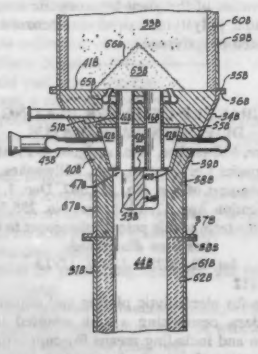
SOLIDS FEEDING DEVICE AND SYSTEM

Robert J. Gartside, Auburndale, Mass., and Herman N. Woebcke, Stamford, Conn., assignors to Stone & Webster Engineering Corporation, Boston, Mass.

Continuation-in-part of Ser. No. 86,951, Oct. 22, 1979. This application Jul. 3, 1980, Ser. No. 165,786

Int. Cl.³ C10G *9/30*

U.S. Cl. 208—127 **2 Claims**



1. In a TRC process wherein the temperature in the reaction chamber is between 1300° and 2500° F. and wherein the hydrocarbon fluid feed or the hydrosulfurization residual oil along with the entrained inert solids and the diluent gas are passed through the reaction chamber for a residence time of 0.05 to 2 seconds, the improvement wherein the process for continually feeding particulate solids to the reaction chamber comprises the steps of:

a. delivering aeration gas under pressure to a localized section of a bed of solids immediately above a conduit extending from the bed of solids to a reaction chamber to fluidize solids in the localized section, said aeration gas having a flow rate less than a rate necessary for incipient fluidization of the bed of solids; and

b. passing the fluidized solids through the conduit to the reaction chamber.

4,352,729

PROCESS FOR HYDROTREATING HEAVY HYDROCARBONS IN THE PRESENCE OF A MOLYBDENUM CONTAINING CATALYST

Yves Jacquin, Sevres; Dai-Nghia Huynh, Rueil-Malmaison, and Maurice Born, Nanterre, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Jan. 5, 1981, Ser. No. 222,228

Claims priority, application France, Jan. 4, 1980, 80 00178

Int. Cl.³ C10G *45/04, 45/08;* B01J *23/28, 23/88*

U.S. Cl. 208—209 **10 Claims**

1. In a process for the treatment with hydrogen of an asphaltene containing charge of heavy hydrocarbons, wherein the charge is contacted with a catalyst containing molybdenum, under hydrotreatment conditions, the improvement comprising effecting the process by introducing into the heavy hydrocarbons charge a molybdenum blue solution in a polar organic solvent, said solvent having a normal boiling point higher than 140° C. and being soluble in said hydrocarbon charge, and then treating the so-modified hydrocarbon charge under said hydrotreatment conditions.

4,352,730

METHOD FOR CLEANING A MAGNETIC SEPARATOR AND MAGNETIC SEPARATOR

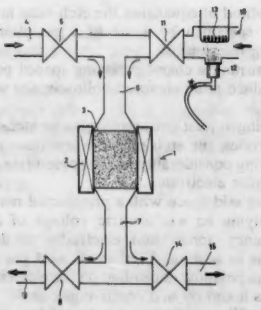
Jacob I. Dijkhuis, TC Zeist, Netherlands, assignor to Holec N.V., Utrecht, Netherlands

Filed Jan. 26, 1981, Ser. No. 228,474

Claims priority, application Netherlands, Jan. 30, 1980, 8000579

Int. Cl.³ B03C *1/02*

U.S. Cl. 209—8 **5 Claims**



1. A magnetic separator comprising a magnet, an inlet for the material to be filtered, an outlet for filtered material, a filtermatrix positioned between the inlet and outlet through which the material to be filtered is passed, a supply of cleaning fluid coupled to the filtermatrix and heater means for heating

the filtermatrix to a temperature higher than the Curie temperature, said heater means heating the cleaning fluid to said temperature higher than the Curie temperature and the cleaning fluid heating said filtermatrix to said temperature.

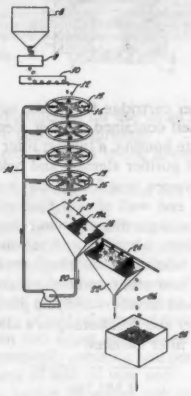
4,352,731
APPARATUS FOR SELECTIVE WETTING OF PARTICLES

Brij M. Moudgil, New York, N.Y., and John G. Roeschlaub, Upland, Calif., assignors to Occidental Research Corporation, Irvine, Calif.

Continuation-in-part of Ser. No. 203,738, Nov. 3, 1980, abandoned, which is a continuation of Ser. No. 897,946, Apr. 19, 1978, abandoned. This application Dec. 29, 1980, Ser. No. 220,656

Int. Cl.³ B03B *1/00*

U.S. Cl. 209—9 **4 Claims**



1. Apparatus for conditioning a particle mixture comprising desired and undesired particles, for enabling optical distinction between the desired particles and the undesired particles said apparatus comprising:

(a) means for sizing said desired and undesired particles to a preselected size, said desired particles having a relatively large surface area receptive to coating by a preselected wetting agent and a relatively small surface area not receptive to coating by the preselected wetting agent, said undesired particles having a relatively small surface area receptive to coating by the preselected wetting agent, and a relatively large surface area not receptive to coating by the preselected wetting agent, said relatively large surface areas being optically distinguishable from said relatively small surface areas after being coated by the preselected wetting agent,

(b) spray means, defining a conditioning zone, for impacting said desired and undesired particles with sufficient wetting agent to substantially coat all of the desired and undesired particles' surface areas receptive to coating by the wetting agent within the conditioning zone;

(c) feeding means for passing the particle mixture comprising the desired and undesired particles through the conditioning zone in a state of free fall;

(d) means for collecting the free-falling particles without substantial breakage thereof and for separating excess wetting agent therefrom, said means for collecting the free-falling particles including an inclined surface member having an impact absorbing material disposed therein;

(e) washing means for removing excess wetting agent from surface areas of the desired and undesired particles which are not receptive to coating by the wetting agent; and

(f) means for supplying said excess wetting agent to the spray means.

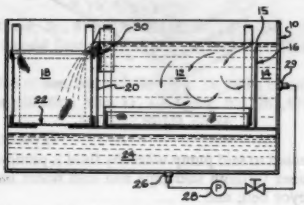
4,352,732
FLOTATION SYSTEM

Raymond C. Massicotte, Romulus, Mich., assignor to Kelsey-Hayes Co., Romulus, Mich.

Continuation of Ser. No. 114,474, Jan. 23, 1980, abandoned. This application Aug. 26, 1981, Ser. No. 296,592

Int. Cl.³ B03B *5/40*

U.S. Cl. 209—17 **6 Claims**



1. In apparatus for separating parts according to their specific gravity, said parts having outside overall dimensions one of which is the minimum outside part dimension that will pass over a weir: a tank having inlet and outlet partitions spaced apart at opposite ends of a float chamber, said inlet and outlet partitions having inlet and outlet weirs respectively for liquid passing into and out of said float chamber, means causing the liquid entering said float chamber to approach said inlet weir as a generally uniform vertically rising stream that rolls over the inlet weir into said float chamber where the rolls proceed downwardly on their side away from the inlet weir and upwardly on their side adjacent said inlet weir, means producing flow over said weirs of a height at least equal to said minimum dimension, and said outlet weir being spaced from said inlet weir by a sufficient distance that said rolling action attenuates in said float chamber adjacent said outlet weir at least for a depth equal to said minimum dimension so that the liquid adjacent said outlet weir does not apply a downward component to floating parts, and whereby parts floating over said exit weir can have a specific gravity that is just slightly less than those sinking in said float chamber.

4,352,733
GOLD AND SILVER SEPARATOR

William M. Hibbard, McCall, Id., assignor to His Way

Filed Dec. 22, 1980, Ser. No. 218,985

Int. Cl.³ B03B *5/00*

U.S. Cl. 209—430 **5 Claims**

1. A gold and silver separator comprising:

a container for storing liquid;

an inclined tray supported above said container;

a rotatable conveyor supported on the tray;

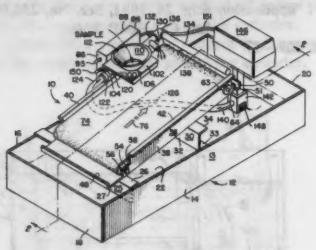
a pump secured within the container;

a fluid conducting pipe having a discharge nipple thereon positioned on said tray adjacent a side and extending longitudinally thereof, said discharge nipple extending at an angle relative to the conveyor belt;

a water bar having a series of orifices therein, said water bar extending across the tray from side to side and adjacent the end thereof, said water bar connected to said fluid conducting pipe;

said discharge nipple being adjacent the water bar and adapted to direct liquid across the conveyor belt from side to side thereof in a slanting or oblique angle and said water

bar at right angles to said fluid conducting pipe and positioned above the conveyor belt adjacent but forward of the end thereof, the orifices therein directed towards the conveyor belt and constructed such that a portion of the liquid emanating therefrom is directed onto the conveyor belt a distance forward of the end thereof and a second portion of the liquid flows over the conveyor belt as it turns over the driven roller, said fluid conducting pipe



connected to said pump whereby fluid is pumped from the container through said pipe and said water bar onto the conveyor belt; and

funnel means adjacent a side of the tray and connected thereto for depositing black sand and heavy concentrate onto the conveyor belt along one edge thereof whereby, upon being acted on by said liquid, the lighter particles are separated from the heavier gold and silver particles.

4,352,734

METHOD OF FILTERING A FLUID AND FILTER

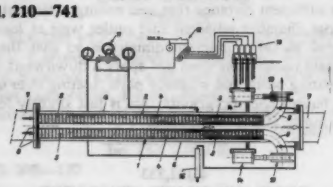
Charles Doucet, 20 Avenue Tronchet, 1226 Thonex, Geneva, Switzerland

Continuation of Ser. No. 62,882, Aug. 1, 1979, abandoned, which is a continuation of Ser. No. 917,397, Jun. 20, 1978, abandoned, which is a continuation of Ser. No. 742,523, Nov. 16, 1976, abandoned. This application Jan. 27, 1981, Ser. No. 228,694

Claims priority, application Switzerland, Nov. 24, 1975, 15215/75

Int. Cl.³ B01D *29/22*

U.S. Cl. 210—741 **9 Claims**



1. A method for filtering a liquid containing solid particles by using a filter element provided with filter openings in a lateral wall, the size of said openings varying from fine openings at one end of the filter to coarser openings toward the opposite end, said method including the steps of: flowing the liquid at a speed sufficient to produce a difference of pressure between the sides of the filter element at the end of the filter where the openings have finer size and compelling the liquid to pass selectively through the finer openings where greater difference of pressure exists, introducing the liquid to be filtered at high speed into the filter element at the end having the coarser filtering openings and closing the opposite end of the filter element during the filtering operation, thereby producing an increase in differential pressure across the filtering element at said opposite end, causing the liquid to pass selectively through the finer filtering openings at said opposite end, and causing filtration action to automatically move away from said end of said filter having the finer openings in dependence of the axial speed of the liquid and in proportion to the solid impurities in the liquid.

4,352,735

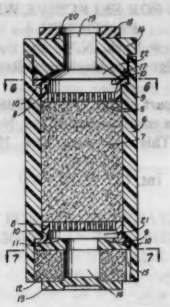
FILTER-PURIFIER CARTRIDGE

Isadore Turetsky, 23940 Welby Way, Canoga Park, Calif. 91307

Filed May 4, 1981, Ser. No. 259,920

Int. Cl.³ B01D *23/06, 27/02*

U.S. Cl. 210—238 **4 Claims**



1. A filter-purifier cartridge for fluids, said cartridge comprising: a hollow self contained purifier element which functions as the cartridge housing, a tubular filter element disposed entirely within said purifier element and below purifying medium contained between two foraminous members, a washer contiguous to that end wall of said filter element facing the purifying medium; said purifier element being manually joined to, and separable from, a bottom wall member and a top wall member having an inlet and a discharge passage respectively, and means to retain said wall members in position; friction seals disposed between said members and said purifier element, said bottom wall member also functioning as a closer for the lower end of said tubular filter element.

4,352,736

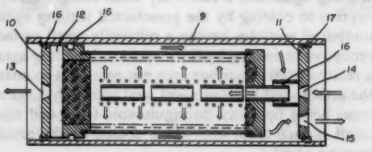
WOUND FLATTENED HOLLOW FIBER ASSEMBLY HAVING PLURAL SPACED CORE SECTIONS

Tetsuo Ukai; Hiroshi Matsumoto, and Chikara Kawamura, all of Otsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Dec. 8, 1980, Ser. No. 214,569

Int. Cl.³ B01D *31/00*

U.S. Cl. 210—321.3 **6 Claims**



1. A hollow fiber assembly having selective permeability consisting essentially of in combination a cylindrical arrangement of multilayers of a plurality of spirally wound flattened, tape-form hollow fibers having selective permeability, said layers of fibers being crisscrossed in a parallel relationship one to the other, at least two core sections centrally located within said cylindrical arrangement of said multilayers of hollow fibers, each of said core sections comprising an engaging member defining a hollow portion, each respective core section being separated and spaced one from the other, a first fluid-tight resin wall disposed at a first end of said assembly in which said hollow fibers terminate such that said hollow fibers open to the exterior of said resin wall, said first resin wall being separated and spaced from said engaging members, a second resin wall disposed at and fixing together a second end of said assembly, said cylindrical arrangement of hollow fibers extend-

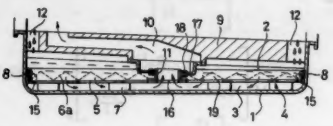
ing continuously between said first resin wall and said second resin wall, an elastic support means for controlling the distance between said first and second resin walls and a fluid supply conduit means for introducing a fluid to be treated into said hollow fiber assembly.

4,352,737

STRAINER FOR AUTOMATIC TRANSMISSION CONTROL VALVE

Takuji Taniguchi, Okazaki, Japan, assignor to Aisin Warner Kabushiki Kaisha, Anjo, Japan

Filed Sep. 15, 1980, Ser. No. 187,127
Claims priority, application Japan, Sep. 19, 1979, 54-129671
Int. Cl.³ B01D *35/02*
U.S. Cl. 210—455 **8 Claims**



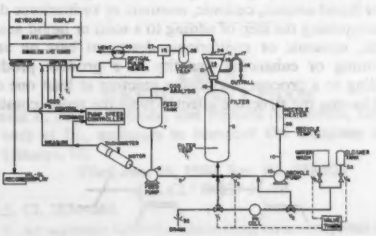
1. A strainer construction for use on an automatic transmission control valve body, comprising:
- a tray-like oil pan attached to the lower end of said valve body;
- a strainer including a filter material and a frame for holding said filter material thereon;
- said frame including a plate-like element having a plurality of openings therethrough, lower projections formed integrally therefrom for holding the frame at a predetermined distance from the bottom surfaces of said oil pan and a peripheral skirt extending therefrom being fitted to the inner periphery of said oil pan and dividing the inner space of said oil pan into upper and lower chambers;
- seal means hermetically securing said peripheral skirt to said inner periphery of said oil pan; and
- a tubular body having an upper end attached to a suction port of said valve body and a lower end connected to said frame,
- the only flow communication between said upper and lower chambers being through said strainer and the flow area of said strainer substantially equals the length-by-width area of said oil pan.

4,352,738

ANAEROBIC FILTER

George A. Blay, and Enrique R. Witt, both of Corpus Christi, Tex., assignors to Celanese Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 95,915, Nov. 19, 1979, abandoned. This application Nov. 10, 1980, Ser. No. 205,388
Int. Cl.³ C02F *3/28*
U.S. Cl. 210—612 **9 Claims**



1. Process for the treatment of an organic wastewater stream containing COD in a recycling anaerobic filter which contains methanogenic bacteria, operates at a COD feed rate, OL, which is at least 0.5 lb COD/cu. ft./day, and produces a stream of gas comprising methane, wherein the improvement comprises continually carrying out an alternating sequence of steps at least once per four hour period, the steps of said sequence comprising,
- (a) a step of measuring the rate of production of methane in said gas stream and thereby determining the rate, KL, at which COD is removed from said filter as methane, and
- (b) a step of setting the COD feed rate, OL, to said filter to maintain a predetermined ratio between the KL determined in said step a and the OL set in said step b,

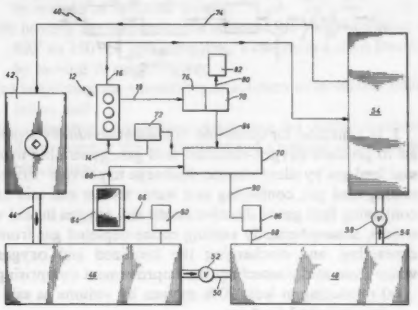
said predetermined ratio of KL to OL, both KL and OL being expressed in the same units of lbs. COD/cu. ft./day, having a value of about 0.65 to 0.9.

4,352,739

COMPLETION AND WORKOVER FLUID FILTRATION SYSTEM

John E. Oliver, Jr., 3752 Del Monte Dr., Houston, Tex. 77019, and W. Gerald Lott, 1857 Post Oak Park Dr., Houston, Tex. 77056

Continuation of Ser. No. 113,789, Jan. 21, 1980, abandoned. This application May 11, 1981, Ser. No. 262,177
Int. Cl.³ B01D *29/38*
U.S. Cl. 210—739 **19 Claims**



1. A method of filtering liquid employed in completion and workover of petroleum wells, said method comprising:
- injecting clean liquid into the well bore in substantially continuous manner;
- receiving a substantially continuous flow of contaminated liquid from said well bore;
- forcing said contaminated liquid through a plurality of solids separator filters interconnected in parallel, series or compounded relation to common inlet, discharge and drain headers, said solids separator filters separating solid particulate above a predetermined size from said contaminated. liquid and resulting in discharge of clean liquid from said discharge header for reinjection into said well bore;
- sequentially restoring each of said filters upon predetermined accumulation in said filters of solid particulate separated from said contaminated liquid by backflushing and discharging backflushed liquid and backflushed particulate to said drain header while maintaining a substantially continuous flow of said contaminated liquid through other ones of said plurality of solids separator filters wherein said backflushing is accomplished by diverting a portion of the flow of cleaned fluid flowing from other filters into said discharge header to the selected filter to be backflushed and causing reversal of the flow of liquid in the selected filter, which cleaned fluid flushes away accumulated particulate from said selected filter and transport said particulate into said drain header;
- transporting fluid and particulate from said drain header to second solids separator means;
- separating a majority of said particulate from said fluid and resulting in partially cleaned fluid;

transporting said separated majority of said particulate to a disposal receiver; and

returning said partially cleaned fluid to said plurality of solid separator filters for filtering

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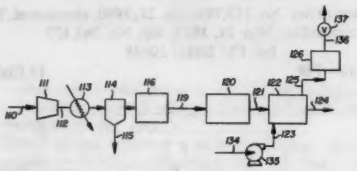
4,352,740

WATER OZONATION METHOD

Ronald J. Grader, East Amherst, and Richard P. Johansen, Williamsville, both of N.Y., assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Feb. 8, 1980, Ser. No. 119,671
Int. Cl.[3] C02F *1/78*
U.S. Cl. 210—760 5 Claims



1. In a method for ozonation of a water stream by separating air to produce oxygen-enriched feed gas, generating ozone in said feed gas by silent electric discharge to provide ozone-containing feed gas, contacting said water stream and said ozone-containing feed gas to dissolve ozone and oxygen in said water stream, atmospherically venting ozone-depleted gas from said contacting, and discharging the ozonized and oxygenated water from said contacting; the improvement comprising:

(a) producing at least 70% oxygen by volume as said oxygen-enriched feed gas;

(b) generating between 4% and 8% by weight ozone in said silent electric discharge such that the figure of merit η, representing the ozone generation energy demand in kwh/lb-O_3, is less than that defined by the equation:

$$\eta = 1/(0.34 - 0.033x)$$

wherein x is the ozone weight % concentration in the so-generated ozone-containing feed gas; and

(c) performing said contacting of said water stream and said ozone-containing feed gas to dissolve between 0.5 ppm and 8 ppm ozone in said water stream.

4,352,741

XANTHOMONAS BIOPOLYMER FOR USE IN DISPLACEMENT OF OIL FROM PARTIALLY DEPLETED RESERVOIRS

William C. Wernau, Groton, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 851,757, Nov. 15, 1977, Pat. No. 4,296,203.
This application Jun. 2, 1981, Ser. No. 269,681
Int. Cl.[3] E21B *43/22*
U.S. Cl. 252—8.55 D 4 Claims

1. In the process for the recovery of crude oil from an oil-bearing subterranean formation wherein a hydrophilic colloid-containing mobility control solution is injected into said formation, the improvement which comprises injecting into said formation a mobility control solution containing pyruvate-free xanthan-containing fermentation broth.

4,352,742

ALCOHOL COMPOSITION CONTAINING NOVEL HYDROXY-SUBSTITUTED ALIPHATIC SILICONE SULFONATE-SILICATE COPOLYMERS

Pauls Davis, Gibraltar, and Joe C. Wilson, Woodhaven, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Apr. 1, 1981, Ser. No. 250,050
Int. Cl.[3] C09K *15/32, 15/10*; C23F *11/10*
U.S. Cl. 252—75 12 Claims

1. An improved inhibited alcohol composition comprising an alcohol and a corrosion inhibiting amount of a copolymer consisting essentially of

from 0.1 to 99.9 parts by weight of at least one silicone sulfonate unit derived from silicone sulfonates of the formula:

$$M\left[O_3S{-}R{-}\underset{\displaystyle R_a^1}{\underset{|}{Si}}{-}O_{\frac{3-a}{2}}\right]_x$$

wherein M is a monovalent, divalent, or trivalent cation; x is 1 to 3 and equal to the valence of M; R is a hydroxy-substituted divalent group having 3 to about 18 carbon atoms and said hydroxy substituent is bonded to a carbon atom vicinal to the carbon atom to which the —O_3S— group is bonded; R^1 is a monovalent alkyl group having 1 to about 8 carbon atoms; and a is an integer of 0 to 2, and

from 0.1 to 99.9 parts by weight of at least one silicate unit derived from silicates of the formula:

$$[X_{1/d}O]_eSiO_{\frac{4-e}{2}}$$

wherein X is a cation that forms a water-soluble silicate; d is the valence of the cation represented by X and has a value of at least 1; and e has a value of from 1 to 3, said parts by weight of said groups in said copolymer being based upon 100 parts by weight of said copolymer.

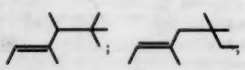
4,352,743

PROCESS FOR AUGMENTING OR ENHANCING THE AROMA OF A DETERGENT WITH ALIPHATIC C_{11} BRANCHED CHAIN ALDEHYDES AND ALCOHOLS

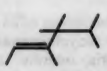
Richard M. Boden, Monmouth Beach, and John H. Geiger, Jr., Lakewood, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 233,861, Feb. 12, 1981, Pat. No. 4,304,689.
This application Sep. 25, 1981, Ser. No. 305,536
Int. Cl.[3] C11D *17/00*
U.S. Cl. 252—174.11 2 Claims

1. A process for augmenting or enhancing the aroma of a solid or liquid anionic, cationic, nonionic or zwitterionic detergent comprising the step of adding to a solid or liquid anionic, cationic, nonionic or zwitterionic detergent base an aroma augmenting or enhancing quantity of a product produced according to a process comprising reacting at least one compound having the structure selected from the group consisting of:

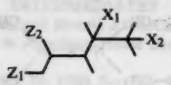


and

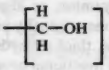


with a mixture of carbon monoxide and hydrogen at ele-

vated temperatures and pressures thereby producing at least one compound defined according to the structure:



wherein one of X_1 or X_2 is hydrogen and the other of X_1 or X_2 is methyl; and wherein one of Z_1 and Z_2 is hydrogen and the other of Z_1 or Z_2 is hydroxymethyl having the structure:



or carboxaldehyde having the structure:

4,352,744

PROTECTING COLLOIDAL SILICA AQUASOLS FROM BACTERIAL DEGRADATION

George E. Bettinger, Wilmington, Del., and John N. Orban, Highland, Ind., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 5, 1980, Ser. No. 184,211
Int. Cl.³ B01J *13/00*
U.S. Cl. 252—313 S **4 Claims**

1. A method of protecting a colloidal silica aquasol from undesirable bacteria, said method comprising adding to said aquasol a bactericide wherein the bactericide is 200–675 ppm 1-(3-chloroallyl)-3,5,7-triaza-1-azoniaadamantane chloride; 100–350 ppm 1,2-benzisothiazolin-3-one; or 160–800 ppm of 1,3,5-triazine-1,3,5(2H,4H,6H)-triethanol and providing sufficient agitation to dissolve the bactericide in the aquasol.

3. A colloidal silica aquasol containing about 15–60 weight percent of silica, said silica having particle diameters within the range of 2–100 millimicrons and a bactericide wherein the bactericide is 200–675 ppm 1-(3-chloroallyl)-3,5,7-triaza-1-azoniaadamantane chloride; 100–350 ppm 1,2-benzisothiazolin-3-one; or 160–800 ppm of 1,3,5-triazine-1,3,5(2H,4H,6H)-triethanol.

4,352,745

LIQUID MOBILE PHASE

David E. James, Batavia, and Richard N. Koeritz, Glen Ellyn, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jun. 16, 1980, Ser. No. 159,828
Int. Cl.³ B01D *15/08*
U.S. Cl. 252—364 **5 Claims**

1. An aqueous solution comprising an incompletely neutralized ammonium salt of orthophosphoric acid, poly acid or boric acid in a 0.05 to 5.0 molar concentration modified by a water soluble alkanol or alkanenitrile at a concentration of from 0.1 to 15 weight percent and buffered to a pH of from 3 to 6.

4,352,746

PROCESS FOR THE PRODUCTION OF OXIDATION-INHIBITING SUBSTANCES

Umberto Bracco; Jean-Louis Viret, both of La Tour-de-Peilz, and Josef Rehacek, Yverdon, all of Switzerland, assignors to Societe d'Assistance Technique Pour Produits Nestle S.A., Lausanne, Switzerland

Continuation of Ser. No. 77,847, Sep. 21, 1979, abandoned. This application Jul. 15, 1981, Ser. No. 283,526
Claims priority, application Switzerland, Sep. 29, 1978, 10186/78
Int. Cl.³ A23B *4/00, 5/00, 9/00*; C09K *15/34*
U.S. Cl. 252—398 **8 Claims**

1. A process for the production of a fraction containing oxidation-inhibiting substances from a vegetable material rich in these substances comprising:

(a) mixing a ground vegetable material or an extract of this vegetable material obtained with a solvent selected from the group consisting of methanol, dichloroethane, ethyl ether, hexane, dioxane, ethanol and mixtures thereof; a co-distillant which is a mono-, di- or triglyceride of a C_{8-10} fatty acid; and a vegetable oil to form a suspension or solution, wherein the amount of co-distillant present in the suspension or solution is in the amount of from 1 to 20% by weight of the total weight;

(b) heating the suspension or solution for 1 to 15 minutes to 100° to 250° C. and separating a carbonised solid fraction by sieving or centrifuging;

(c) subjecting the suspension or solution to molecular distillation; and

(d) collecting a condensate containing the oxidation-inhibiting principles, the co-distillant and a portion of the vegetable oil used.

4,352,747

METHOD TO LOWER FLY-ASH RESISTIVITY

Richard L. Every, Lake Zurich; Franklin D. Lewandowski, Grayslake, and Jerome F. Lech, Crystal Lake, all of Ill., assignors to Dearborn Chemical Company, Lake Zurich, Ill.

Filed Mar. 30, 1979, Ser. No. 25,327
Int. Cl.³ H01B *1/00*
U.S. Cl. 252—500 **7 Claims**

1. In the addition of an additive of amine and a member of the group consisting of sulfuric or sulfamic acid and ammonium salts thereof to a coal fired utility boiler having heat exchangers and fly-ash collectors, the improvement comprising making the addition in the zone between the heat exchangers and the fly-ash collectors at a temperature of about 300°–500° F. thereby reducing electrical resistivity of the fly-ash particles and increasing their mean particle size without fouling heat exchange surfaces with the additive; the additive being added at the rate of about 0.05 to 0.70 pounds, active basis, per short ton of coal burned; and the amine having the formula:

in which R_1, R_2, and R_3 are each independently selected from the group consisting of H and alkyl, in which alkyl has about 1–8 carbons.

4,352,748

NOVEL ACYL-POLYALKYLINDAN COMPOUNDS AND THE USE THEREOF AS A BASE FOR PERFUME, AS WELL AS PERFUME COMPOSITIONS

Petrus C. Traas, Naarden; Harrie Renes, Bussum, and Harmannus Boelens, Huizen, all of Netherlands, assignors to Naarden International N.V., Netherlands

Continuation of Ser. No. 879,509, Feb. 21, 1978, abandoned. This application Mar. 12, 1981, Ser. No. 242,841

Claims priority, application Netherlands, Feb. 25, 1977, 7702076

Int. Cl.³ C11D *9/44*; C07C *13/30*

U.S. Cl. 252—522 R 2 Claims

1. A perfume composition comprising 6-acetyl-1-isopropyl-2,3,3,5-tetramethyl indan as a fragrance component in combination with at least one auxiliary substance selected from the group consisting of conventional perfume fragrances, mixtures thereof and perfume solvents.

4,352,749

HOT-MELT ADHESIVE COMPOSITION

Masamitsu Nakabayashi, Osaka; Fumihiro Doura, Sakai; Reiji Miyamoto, and Tetsujiro Tatsumi, both of Ichihara, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Feb. 17, 1981, Ser. No. 235,028

Claims priority, application Japan, Feb. 14, 1980, 55-17364

Int. Cl.³ C08L *91/08, 93/00*

U.S. Cl. 525—149 9 Claims

1. A hot-melt adhesive composition containing:

(i) a first component consisting of (a) 20 to 100 weight percent of a hydrolyzed ethylene-vinyl acetate copolymer whose vinyl acetate unit content is in the range of 5 to 50 weight percent and its hydrolysis degree is at least 50 percent and/or a carboxyl-containing product obtained by grafting said copolymer with a carboxyl-containing unsaturated compound or anhydride thereof and (b) 0 to 80 weight percent of a resin compatible with said copolymer and/or said carboxyl-containing product,

(ii) a second component which is a dicyclopentadiene petroleum resin, the proportion of said first component being not less than 20 weight percent and that of said second component being not less than 20 weight percent, both based on said two components, and

(iii) a wax as a third component.

4,352,750

FRICTION MATERIAL FOR RAILROAD BRAKE SHOES

Frank W. Eschen, San Diego, Calif., assignor to Manville Service Corporation, Denver, Colo.

Filed Aug. 3, 1981, Ser. No. 289,140

Int. Cl.³ C08L *61/06*

U.S. Cl. 523—156 7 Claims

1. A friction material fiber free composition suitable for use as a brake shoe for railroad service comprising by volume:

Phenolic Resin Binder: 1–15%

Carbonaceous Component: 30–60%

Organic Component: 15–30%

Inorganic Component: 5–35%

Friction Modifiers: 1–15%

With the balance of other additives being: 1–7%.

4,352,751

SPECIES-LINKED DIAMINE TRIACETIC ACIDS AND THEIR CHELATES

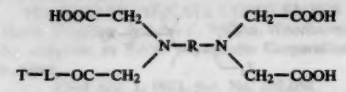
Irwin Wieder, and Robert H. Wollenberg, both of Los Altos, Calif., assignors to Analytical Radiation Corporation, Los Altos, Calif.

Filed Sep. 10, 1979, Ser. No. 73,728

Int. Cl.³ C07C *101/26, 103/18*; G01N *33/48, 33/50*; C12Q *1/06*

U.S. Cl. 260—112 R 25 Claims

1. A reagent for use in the fluorometric quantification of a biologically active organic species comprising a diamine triacetic acid having the structural formula:



wherein R is a two to eight atom covalent bridge selected from carbon-oxygen ether bridges, carbon-nitrogen secondary and tertiary amide bridges and carbon-carbon alkylene, cycloalkylene and arylene bridges, T is the biologically active organic species to be fluorometrically quantified, T being other than an aliphatic mono- or polyamine, or aliphatic mono- or polyol, but comprising at least one originally present or added primary amine, secondary amine, thiol or hydroxyl functional group, and L is said at least one functional group in deprotonated form covalently bonding T to the indicated carbonyl carbon of the diamine triacetic acid.

4,352,752

PROCESS FOR THE PREPARATION OF DIPEPTIDES

Iwao Ojima, Sagamihara, and Shigemi Suga, Oiso, both of Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

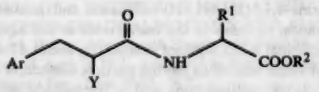
Filed Mar. 5, 1981, Ser. No. 240,983

Claims priority, application Japan, Mar. 7, 1980, 55-28060

Int. Cl.³ C07C *103/52, 101/30, 101/72*

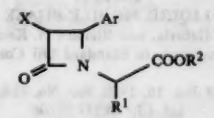
U.S. Cl. 260—112.5 R 13 Claims

1. A process for the preparation of a dipeptide represented by the formula



wherein Ar represents an aromatic group; R^1 represents a hydrogen atom, an alkyl group or an aryl group; R^2 represents a hydrogen atom, an alkyl group or an aromatic group; Y represents a hydroxy group, an amino group or an acylamino group,

which comprises subjecting a β-lactam compound represented by the formula



wherein Ar, R^1 and R_2 have the same meanings as defined above, and X represents a hydroxy group, an amino group or an acylamino group, an azido group or benzyloxy group,

to hydrogenolysis in the presence of a catalyst consisting essentially of palladium.

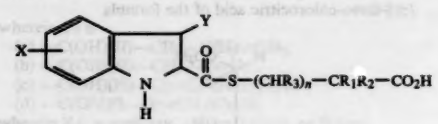
4,352,753

3-[[(2,3-DIHYDRO-1H-INDOL-2-yl)CARBONYL]THIO}-PROPANOIC (AND ACETIC) ACIDS AS INTERMEDIATES

Dong H. Kim, Wayne, and Ronald J. McCaully, Malvern, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Dec. 29, 1980, Ser. No. 220,652
Claims priority, application Argentina, Aug. 11, 1980, 282109
Int. Cl.³ C07D *209/12, 209/18*
U.S. Cl. 260—326.12 R 10 Claims

1. A compound of the formula:



wherein:

n is 1 or 0;

R_1 is hydrogen, lower alkyl of 1 to 4 carbon atoms, phenyl, substituted phenyl, benzyl, or substituted benzyl;

R_2 is hydrogen or lower alkyl of 1 to 4 carbon atoms;

R_3 is hydrogen, lower alkyl of 1 to 4 carbon atoms, benzoyl, or substituted benzoyl;

X is hydrogen, hydroxy, lower alkyl of 1 to 4 carbon atoms, lower alkoxy of 1 to 4 carbon atoms, or halogen; and

Y is hydrogen, lower alkyl of 1 to 4 carbon atoms, phenyl, or substituted phenyl;

or salts thereof;

wherein substituted phenyl, substituted benzyl and substituted benzoyl refer to such groups with the phenyl ring optionally substituted with a halogen, a lower alkyl group of 1 to 4 carbon atoms, or a lower alkoxy group of 1 to 4 carbon atoms.

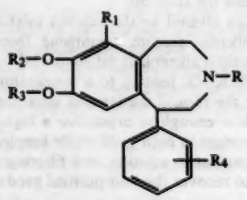
4,352,754

3-THIENYLMETHYL-6-HALO-7,8-DIHYDROXY-1-PHENYL-2,3,4,5-TETRAHYDRO-1H-3-BENZAZEPINES

Joseph Weinstock, Phoenixville, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

Division of Ser. No. 893,238, Apr. 4, 1978, Pat. No. 4,255,422, which is a continuation-in-part of Ser. No. 742,965, Nov. 17, 1976, Pat. No. 4,160,765. This application Jun. 12, 1980, Ser. No. 158,833
Int. Cl.³ C07D *223/16;* A61K *31/55*
U.S. Cl. 260—330.3 5 Claims

1. A compound of the formula:



in which:

R is thienylmethyl;

R_1 is halo or trifluoromethyl;

R_2 and R_3 are hydrogen or alkanoyl of from 2–7 carbons; and

R_4 is hydrogen or from 1–3 substituents from the group comprising trifluoromethyl, halo, methyl, methoxy or, when another of this group is present, hydroxy or acetoxy;

together with its nontoxic, pharmaceutically acceptable salts.

4,352,755

PRODUCTION OF MALEIC ANHYDRIDE

Raymond Higgins, Middlesbrough; Graham J. Hutchings, Northallerton; Deborah A. Trebilco, Redcar, and Philip E. Starkey, Guisborough, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Nov. 6, 1980, Ser. No. 204,699
Claims priority, application United Kingdom, Nov. 20, 1979, 7940087
Int. Cl.³ C07D *307/60*
U.S. Cl. 549—258 10 Claims

1. A process which comprises producing a product gas stream containing at least 3% by volume of maleic anhydride by oxidising a straight chain C_4 hydrocarbon with oxygen in a stream comprising C_4 hydrocarbon 25 to 60% and oxygen 20 to 45%, the percentages being by volume and condensing maleic anhydride substantially free from water from the product gas stream.

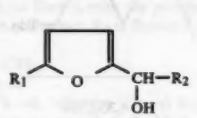
4,352,756

PRODUCTION OF FURFURYL ALCOHOLS

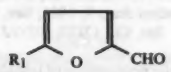
Yukihisa Takisawa; Kenji Saito, and Hiroshi Yamachika, all of Osaka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Mar. 30, 1981, Ser. No. 248,677
Claims priority, application Japan, Apr. 9, 1980, 55/47329
Int. Cl.³ C07D *307/44*
U.S. Cl. 549—497 6 Claims

1. A process for the production of a furfuryl alcohol of the formula:



wherein R_1 is hydrogen or methyl and R_2 is an allyl or α-methylallyl group, which comprises reacting the corresponding furfural of the formula:



wherein R_1 is as defined above, with magnesium and allyl chloride or α-methylallyl chloride and hydrolyzing the resultant product, the improvement comprising using tetrahydrofuran or a mixture of tetrahydrofuran with at least one aromatic hydrocarbon as a reaction medium, and simultaneously adding the furfural and allylchloride or α-methylallyl chloride to the reaction medium comprising magnesium.

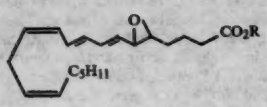
4,352,757

PROCESS FOR THE PREPARATION OF ESTERS OF LEUKOTRIENE A

John G. Glenson, Delran, N.J.; Charles M. Kinzig, Merion Station, and Deborah L. Bryan, West Chester, both of Pa., assignors to SmithKline Beckman Corporation, Philadelphia, Pa.

Filed Feb. 2, 1981, Ser. No. 230,915
Int. Cl.³ C07D *303/42, 303/40*
U.S. Cl. 549—513 7 Claims

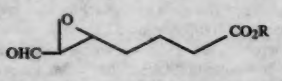
1. A process for the preparation of alkyl esters of leukotriene A, represented by the following structural formula (I):



(I)

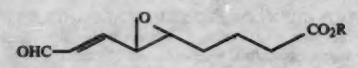
wherein R is alkyl of 1 to 4 carbon atoms, benzyl or 1,1,1-trichloroethyl, which comprises:

(a) reacting 7-oxo-5,6-trans-epoxyheptanoate ester represented by the following structural formula (IV)



(IV)

wherein R is defined above and formylmethylenetriphenylphosphorane to afford 9-oxo-5,6-trans-epoxynon-7(E)enoate ester, represented by the following structural formula (II)



(II)

wherein R is defined above; and

(b) reacting 9-oxo-5,6-trans-epoxynon-7(E)enoate ester with triphenylphosphoranylidene undec-6(Z),9(Z)-diene, represented by the following structural formula (III)

(III)

4,352,758

CHLOROCITRIC ACIDS

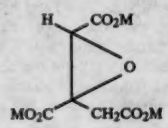
Robert W. Guthrie, Saddle Brook; Richard W. Kierstead, North Caldwell; Francis A. Mennona, Nutley, and Ann C. Sullivan, Cedar Grove, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 973,504, Dec. 26, 1978, Pat. No. 4,312,885. This application Aug. 7, 1981, Ser. No. 290,988

Int. Cl.³ C07D *303/12*

U.S. Cl. 549—521 **7 Claims**

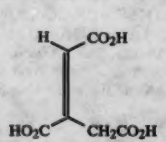
1. A process for the preparation of tri-salt of (±)-threo-epoxyaconitic acid of the formula



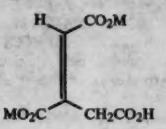
wherein M is alkali metal,

which comprises the steps of

(a) contacting trans-aconitic acid of the formula

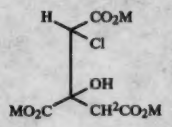


with an alkali metal hydroxide in an aqueous solvent at temperatures in the range of −20° C.−25° C. to form a di-salt of trans-aconitic acid of the formula



wherein M is alkali metal;

(b) contacting the di-salt of trans-aconitic acid with an alkali metal hypochlorite in an aqueous solvent at the temperatures in the range of −20° C.−25° C. to form a tri-salt of (±)-threo-chlorocitric acid of the formula



wherein M is alkali metal; and

(c) contacting the tri-salt of threo-chlorocitric acid with alkali metal hydroxide in an aqueous solvent at temperature in the range of −20° C. to 25° C.

4,352,759

RECOVERY OF HIGH PURITY N-ACYL TAURINE IN HIGH YIELD

Erwin Schwarte, 200 Glen Rd., Mountainside, N.J. 07092

Filed Apr. 29, 1981, Ser. No. 258,840

Int. Cl.³ C07C *143/90*

U.S. Cl. 260—401 **6 Claims**

1. A process for recovering an N-acyl taurine in high yield and substantially free of alkali metal chloride salt from a crude product mixture thereof resulting from reacting, in an aqueous medium at temperatures ranging from about 30° C. up to reflux, 1 mole of a C_6–C_{22} carboxylic acid chloride with 1 mole of a taurine salt of the formula

$$HNR^1—CHR^2—CHR^2—SO_3M$$

wherein

R^1 is H or a C_{1-6} hydrocarbon radical,

R^2 is independently H, methyl or ethyl, and

M is alkali metal,

in the presence of about 1 mole of alkali metal hydroxide, which comprises the steps of:

adding a C_{1-4} alkanol to the reacted mixture to form an aqueous-alkanol mixture comprising from about 50 to 70% by weight alkanol, about 20 to 35% water and about 10 to 15% solids, heating to a temperature sufficient to solubilize the N-acyl taurine and salts, then cooling the solution low enough to crystallize a high purity N-acyl taurine product in high yield while keeping said salt and other impurities in solution, and filtering the crystalline material to recover the thus-purified product.

4,352,760

ORGANIC COMPOUNDS SUBSTITUTED HEPTADECA-5,9- AND 5,10-DIENOIC ACID

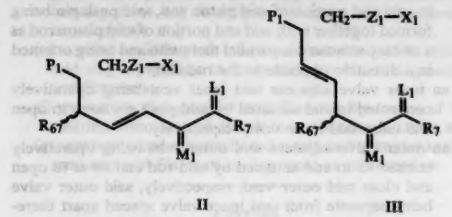
Kirk M. Maxey, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Dec. 29, 1980, Ser. No. 220,598

Int. Cl.³ C07C *57/02*

U.S. Cl. 260—404 **27 Claims**

1. A compound of the formula II or III,



II III

wherein P_1 is
(a) —C(OH)(H)—CH_2—C(H)=CH_2;
(b) —C(OH)(H)—CH_2—C≡N;
(c) —C(OH)(H)—C(=CH_2)C(O)H; or
(d) —C(OH)H—C(=CH_2)C≡N;
wherein R_{67} is hydroxy, chloro, bromo, or fluoro;
wherein X_1 is
(a) —CO_2R_1, wherein R_1 is hydrogen, alkyl of from one to 12 carbon atoms, cycloalkyl of 3 to 10 carbon atoms, aralkyl of from 7 to 12 carbon atoms, phenyl, phenyl substituted by one, 2 or 3 chloro or one, 2 or 3 alkyl, or phenyl substituted in the para position by
(i) NHC(O)R_{25}
(ii) —O—C(O)R_{26},
(iii) —CO_2R_1
(iv) —O—C(O)—(p—Ph)—R_{27}, wherein p—Ph is 1,4-phenylene, or
(v) —CH=N—NH—C(O)—NH_2,
wherein R_{25} is methyl, phenyl, acetamidophenyl, benzoylamidophenyl, or NH_2; wherein R_{26} is methyl, phenyl, NH_2, or methoxy; wherein R_{27} is hydrogen, acetamido, benzoylamido; or R_1 can be a pharmacologically acceptable cation;
(b) —COW_1, wherein W_1 is
(i) amido of the formula—$NR_{21}R_{22}$, wherein R_{21} and R_{22} are the same or different and are:
hydrogen;
alkyl of one to 12 carbon atoms, inclusive;
cycloalkyl of 3 to 10 carbon atoms, inclusive;
aralkyl of 7 to 12 carbon atoms, inclusive;
phenyl;
phenyl substituted with one, 2, or 3 chloro, alkyl of one to 3 carbon atoms, inclusive, hydroxy, carboxy, alkoxycarbonyl of one to 4 carbon atoms, inclusive, or nitro;
carboxyalkyl of one to four carbon atoms, inclusive;
carbamoylalkyl of one to 4 carbon atoms, inclusive;
cyanoalkyl of one to 4 carbon atoms, inclusive;
acetylalkyl of one to 4 carbon atoms, inclusive;
benzoylalkyl of one to 4 carbon atoms, inclusive;
benzoylalkyl substituted by one, 2, or 3 chloro, alkyl of one to 3 carbon atoms, inclusive, hydroxy, alkoxy of one to 3 carbon atoms, inclusive, carboxy, alkoxycarbonyl of one to 4 carbon atoms, inclusive, or nitro;
pyridyl;
pyridyl substituted by one, 2, or 3 chloro, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive;
pyridylalkyl of one to 4 carbon atoms, inclusive; or
pyridylalkyl substituted by one, 2, or 3 chloro, alkyl of one to 3 carbon atoms, inclusive, hydroxy, alkoxy of one to 3 carbon atoms, inclusive, hydroxyalkyl of one to 4 carbon atoms, inclusive, dihydroxyalkyl of one to 4 carbon atoms inclusive, or trihydroxyalkyl of one to 4 carbon atoms, inclusive;
with the further proviso that not more than one of R_{21} and R_{22} is other than hydrogen or alkyl;
(ii) cycloamido selected from the group consisting of
1-pyrrolidinyl,
1-piperidinyl,
4-morpholinyl,
hexahydro-1H-azepin-1-yl,
3-pyrrolin-1-yl, or
3,6-dihydro-1(2H)-pyridinyl, substituted by R_{21} or R_{22} or both or
1-piperazinyl substituted at the 4 position by R_{21},
wherein R_{21} and R_{22} are as defined above;
(iii) carbonylamido of the formula—$NR_{23}COR_{21}$, wherein R_{23} is hydrogen or alkyl of one to 4 carbon atoms and R_{21} is as defined above;
(iv) sulfonylamido of the formula—$NR_{23}SO_2R_{21}$, wherein R_{21} and R_{23} are as defined above; or
(v) hydrazino of the formula—$NR_{23}R_{24}$, wherein R_{24} is amido of the formula—$NR_{21}R_{22}$, as defined above, or cycloamido, as defined above; or
(c) CH_2OH;
(d) $CH_2NR_{31}R_{32}$ wherein R_{31} and R_{32} are the same or different and are hydrogen or alkyl of from one to 4 carbon atoms;
wherein Z_1 is
(a) cis—CH=CH—$CH_2(CH_2)_g$—CH_2—;
(b) trans—CH=CH—$CH_2(CH_2)_g$—CH_2;
(c) —CH=CH—$CH_2(CH_2)_g$$CF_2$—;
(d) trans—CH=CH—$CH_2(CH_2)_g$—CH_2—;
(e) cis—CH_2—CH=CH—$(CH_2)_g$—CH_2;
(f) trans—CH_2—CH=CH—$(CH_2)_g$—CH_2;
(g) —$(CH_2)_3$—$(CH_2)_g$—CH_2;
(h) —$(CH_2)_3$—$(CH_2)_g$—CF_2;
(i) —CH_2—O—CH_2—$(CH_2)_g$—CH_2—;
(j) phenyl substituted by —$CH_2(CH_2)_g$ or —O—$(CH_2)_g$, wherein g is one, 2, or three;
wherein L_1 is α—R_3:β—R_4 or β—R_3:α—R_4 or a mixture of the two, wherein R_3 and R_4 are the same or different and are hydrogen, methyl, or fluoro, with the proviso that when R_3 is fluoro R_4 is fluoro and when R_4 is fluoro R_3 is fluoro;
wherein R_7 is
(a) —$(CH_2)_m$—CH_3;
(b) O—(Ph—s); or
(c) —$(CH_2)_n$(Ph—s); wherein (Ph—s) is phenyl or phenyl substituted by zero, one, 2, or 3 chloro, fluoro, trifluoromethyl, alkyl of from one to 3 carbon atoms, or alkoxy of from one to 3 carbon atoms, with the proviso that not more than two phenyl substitutents are other than alkyl, m is one, 2, 3, 4, or 5, and n is zero, one, 2, 3, or 4; and
wherein M_1 is α-hydroxy:β-methyl or α-hydroxy:β-hydrogen.

4,352,761

PRODUCTION OF ACETYL CHLORIDE

Heinz Erpenbach, Cologne; Klaus Gehrmann; Winfried Lork, both of Erftstadt, and Peter Pring, Hürth, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 22, 1981, Ser. No. 256,387

Claims priority, application Fed. Rep. of Germany, May 2, 1980, 3016900

Int. Cl.³ C07C *51/58*

U.S. Cl. 260—544 A **5 Claims**

1. In a process for making acetyl chloride by reacting methyl chloride with carbon monoxide under practically anhydrous conditions, at temperatures of 350 to 575 K., under pressures of 1 to 300 bars, and in the presence of a catalyst system containing at least one of the noble metals selected from rhodium, palladium, iridium or at least one compound thereof selected from the group consisting of a chloride, acetate, carbonyl, or complex compound; iodine or iodine compounds or mixtures of iodine and iodine compounds; and an inert organic solvent, the improvement which comprises: effecting the reaction in the presence of a catalyst system containing n-heptane as the inert solvent and as additional ingredients methyltrialkyl phosphonium iodide or methyltriaryl phosphonium iodide or mixtures thereof and at least one compound of chromium, molybdenum or tungsten selected from the group consisting of a chloride, acetate, carbonyl, or complex compound, thereby

effecting the separation of the resulting reaction product into two phases, the entire catalyst system undergoing complete dissolution and forming the denser lower phase, whilst the bulk portion of acetyl chloride formed is contained in the upper solvent phase.

4,352,762

PROCESS FOR THE PRODUCTION OF S-TERTIARYALKYL PHOSPHONODITHOIC HALIDES

Mohamed A. Fahmy, Edison, N.J., assignor to Rhone-Poulenc Agrochimie, Lyon, France

Continuation of Ser. No. 71,465, Aug. 31, 1979, abandoned. This application Oct. 29, 1980, Ser. No. 201,937
Int. Cl.³ C07F 9/20
U.S. Cl. 260—972 8 Claims

1. The process of preparing compounds of the formula

which comprises reacting

with R_1SH in a solvent in the presence of a base at a temperature of about 20° C. to 100° C.; in which

R is alkyl of 1 to 6 carbon atoms;

R_1 is tertiary alkyl of 4 to 8 carbon atoms; and

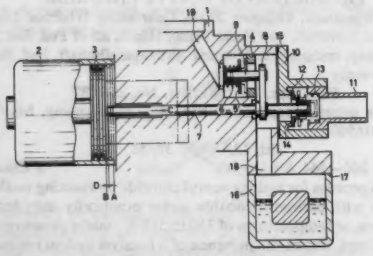
X is halogen.

4,352,763

VENT CHANGEOVER DEVICE FOR A CARBURETOR

Nobuo Yamada, Kariya, and Toshiharu Morino, Mie, both of Japan, assignors to Aisan Industry Co., Ltd., Aichi, Japan

Continuation of Ser. No. 137,157, Apr. 4, 1980, abandoned. This application Oct. 13, 1981, Ser. No. 310,541
Claims priority, application Japan, Apr. 27, 1979, 54/57490
Int. Cl.³ F02M 5/08
U.S. Cl. 261—72 R 5 Claims



1. A vent change-over device for an engine having a carburetor with a fuel bowl, comprising

a body forming an inner vent and an outer vent operatively communicating with said fuel bowl,

a suction chamber operatively controlled by the engine,

means including a piston moveably mounted in said suction chamber and having a piston rod connected thereto moveably mounted in said body, said piston rod being formed with two working ends adjacent a free end portion thereof, one of said working ends constitutes a rod end of said piston rod and the other of said two working ends constituteds an angle member including a push pin joined to said end portion of said piston rod, said push pin being formed together with said end portion of said piston rod as a unitary structure in parallel therewith and being oriented in a direction opposite to the rod end,

an inner valve adjacent said inner vent being operatively connected to and actuated by said push pin so as to open and close said inner vent, respectively,

an outer valve adjacent said outer vent being operatively connected to and actuated by said rod end so as to open and close said outer vent, respectively, said outer valve being separate from said inner valve spaced apart therefrom and disposed as as to face in a direction opposite to the direction in which said inner valve faces,

first and second spring means for biasing said inner and outer valves, respectively, in vent-closing directions, said inner and outer vents operatively communicating with the fuel bowl via said inner and outer valves, respectively, said inner and outer valves being positioned relative to said push pin and said rod end of said piston rod and said inner and outer vents and cooperating with said first and second spring means, respectively, so as to be actuated alternately in accordance with the movement of said piston rod such that when one of said valves is opened the other of said valves is closed,

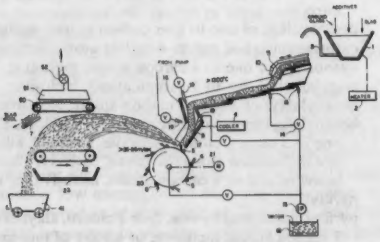
said first spring means having a biasing force greater than that of said second spring means, and said piston being operatively connected to said suction chamber for movement so as, via said piston rod, to open said inner vent so as to communicate with said float chamber by opening said inner valve only when the engine is running, and to open said outer vent so as to communicate with said float chamber by opening said outer valve only when the engine is stopped, respectively.

4,352,764

METHOD OF MAKING SLAG SAND AND SLAG WOOL

Paul Metz, Luxembourg; Robert Schockmel, Esch, and Roland Mersch, Dudelange, all of Luxembourg, assignors to Arbed S.A., Luxembourg, Luxembourg

Continuation of Ser. No. 944,848, Sep. 22, 1978, abandoned. This application Jun. 24, 1980, Ser. No. 162,361
Claims priority, application Luxembourg, Sep. 26, 1977, 78185
Int. Cl.³ B01J 2/02
U.S. Cl. 264—8 3 Claims



1. A method of simultaneously making slag sand and slag wool from metallurgical slag, said method comprising the steps of:

(a) slag shaping a slag stream at a temperature of at least 1300° C. and above the temperature at which said slag crystallizes;

(b) flowing said slag stream to a vaned drum before cooling of said slag stream to a temperature below that at which said slag crystallizes;

(c) rotating said vaned drum at a peripheral speed of at least 25 m/sec;

(d) impinging said slag stream prior to cooling thereof below

said temperature at which said slag crystallizes onto the rotating drum and thereby breaking up said slag stream into droplets;

(e) cooling said droplets below said temperature at which said slag crystallizes to form said droplets into granules and filaments;

(f) projecting said granules and filaments by means of the rotating drum through the air to a collection location; and

(g) separating and separately collecting said granules as slag sand and said filaments as slag wool at said location.

4,352,765

METHOD FOR PRODUCING RUBBER ARTICLES BY SUBJECTING POWDERED CAOUTCHOU COMPOSITION TO INTENSIVE MIXING AND HIGH-SPEED ELECTRONS

Hermann Menk, Bodolz, and Michael Kempter, Munich, both of Fed. Rep. of Germany, assignors to Metzeler Kautschuk GmbH, Munich, Fed. Rep. of Germany

Filed Jul. 30, 1980, Ser. No. 173,764

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1979, 2931793

Int. Cl.³ C08J 7/16; C10M 3/22; B29H 5/26; B29C 1/04

U.S. Cl. 264—22 12 Claims

1. A method for producing rubber articles from powdered caoutchouc containing compositions which comprises subjecting a powdered caoutchouc containing composition for producing a rubber article which composition does not contain any vulcanization accelerators to thorough mixing at an elevated temperature in a high-speed mixer to produce an intermixed, homogeneous caoutchouc mixture which will produce a rubber article on cross-linking, and irradiating the homogeneous caoutchouc mixture with high-speed electrons to cross-link the caoutchouc mixture.

4,352,766

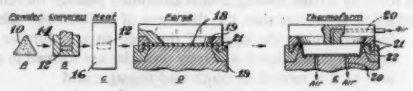
SCRAPLESS FORMING OF PLASTIC ARTICLES

Norbert L. Bradley; Kenneth J. Cleereman, and Ritchie A. Wessling, all of Midland, Mich., assignors to The Dow Chemical Co., Midland, Mich.

Division of Ser. No. 736,628, Oct. 28, 1976, Pat. No. 4,323,531, which is a continuation of Ser. No. 484,498, Jul. 1, 1974, abandoned, which is a division of Ser. No. 215,632, Jan. 5, 1972, abandoned, which is a continuation-in-part of Ser. No. 119,669, Mar. 1, 1971, abandoned. This application Nov. 24, 1980, Ser. No. 209,639

Int. Cl.³ B29D 9/00

U.S. Cl. 264—45.5 4 Claims



1. A process for forming a foam thermoplastic article having dense surfaces and a porous less dense inner structure comprising the steps of:

(a) dry blending a mixture of a thermoplastic powder and a chemical blowing agent in sufficient quantity to make said article;

(b) compressing said blend into a briquette having green strength;

(c) heating said briquette to a temperature in the range from about the alpha transition temperature to less than the melt forming temperature of said powder and the activation temperature of said blowing agent;

(d) maintaining said temperature for a period sufficient to soften and sinter said briquette; and

(e) forging said briquette within said temperature range with sufficient heat to activate said blowing agent, and with substantial plug flow deformation to obtain substantial fusion of the powder forming said article while providing said dense surfaces.

4,352,767

ELIMINATION OF PAINT FLASH ON FOAM MOLDED ARTICLES DURING THEIR MOLDING

Michael Ladney, Jr., 45 Oxford Rd., Grosse Pointe Shores, Mich. 48236, and Raymond W. Hatfield, Warren, Mich., assignors to Michael Ladney, Jr., Grosse Pointe Shores, Mich., a part interest

Filed Dec. 29, 1980, Ser. No. 220,428

Int. Cl.³ B29D 27/00; B29C 17/12

U.S. Cl. 264—46.6 11 Claims

1. The method of eliminating paint flash at the parting line of a foamed resin article formed in a mold, the interior molding surfaces of which are sprayed with a paint before the foam resin material is introduced into the mold and which paint becomes integrally bonded to the exterior surface of the foamed resin article, which comprises spraying the cavity surface of the open mold which forms the painted surface of the molded article with a paint compatible with the foam resin; permitting the paint spray to extend beyond the confines of the mold cavity and onto the parting faces of the mold which intersect and peripherally surround said cavity surface; and, while said paint is still wet, contacting at least the line of intersection between said parting faces and said cavity surfaces substantially throughout its lineal extent with a member adapted to interrupt the continuity of the wet paint layer between the cavity and parting face surfaces at said line of intersection; permitting paint in the cavity to at least partially dry after its continuity has been interrupted to thereby reduce its fluidity such that the interrupted portions thereof will not flow back together when the mold is thereafter closed; thereafter closing the mold and introducing said foam resin material; and, after said foam resin material has cured, opening the mold and removing the molded part therefrom whereby the paint layer on said parting surfaces remains separated from the layer of paint on the foamed article removed from the cavity.

4,352,768

FIBER REINFORCED CATHODE FOR ELECTROCHEMICAL CELL

James Epstein, Sharon, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Division of Ser. No. 939,584, Sep. 5, 1978, abandoned. This application Nov. 13, 1979, Ser. No. 93,572

Int. Cl.³ C04B 35/52

U.S. Cl. 264—105 8 Claims

1. A method for forming a preformed cathode for a primary electrochemical cell comprising the steps of:

mixing a quantity of carbon black particles with from 1 to 10 weight percent of the mixture of a fibrous additive and an effective amount of suitable liquid to form a uniform slurry;

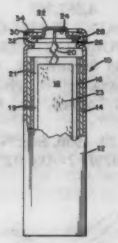
adding a quantity of a mechanical binder which is inert in the primary electrochemical cell to the slurry, the quantity of mechanical binder being at least 1 percent by weight of the resulting preformed cathode;

remixing the slurry to disperse uniformly the binder through the slurry;

sheeting the slurry;

drying the sheeted slurry; and

curing the preformed cathode for a time sufficient to remove substantially all of the liquid and to stabilize the mechanical



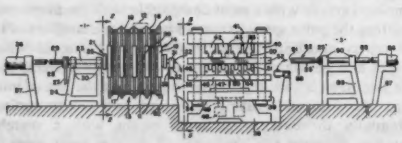
binder thereby producing a self-supporting reinforced member for insertion into a primary electrochemical cell.

4,352,769

METHOD FOR SIMULTANEOUSLY MOLDING A PLURALITY OF PRODUCTS

Leonard S. Meyer, Columbia, S.C., assignor to Victor United, Inc., Chicago, Ill.

Division of Ser. No. 153,217, May 27, 1980. This application Mar. 31, 1981, Ser. No. 249,423
Int. Cl.³ B29D 3/02; B29G 7/00
U.S. Cl. 264—134 9 Claims



1. The method of molding parts comprising the steps of: winding a curable resin-impregnated strand about opposite end plates of a frame assembly to provide a strand bundle spanning an opening in said frame assembly, shifting said wound frame assembly into a molding station to dispose said bundle in a spanning manner between open spaced-apart mold sections therein, said molding station including opposed guide means, while engaging opposite ends of said frame assembly with said opposed guide means actuating cutting means adjacent said guide means to sever said bundle strands juxtaposed said frame assembly end plates, closing said mold sections to mold said bundle therebetween with at least one said mold section passing through said frame assembly opening curing said resin thereby forming a molded part, opening said mold sections after molding of said part, and retracting said frame assembly and the molded part from said molding station.

4,352,770

PROCESS FOR FORMING SHAPED CELLULOSIC PRODUCT

Albin F. Turbak, Convent Station; Adel El-Kafrawy, Rockaway; Fred W. Snyder, Jr., Wharton, and Andrew B. Auerbach, Livingston, all of N.J., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 145,333, Apr. 30, 1980, Pat. No. 4,302,252, which is a continuation-in-part of Ser. No. 60,814, Jul. 25, 1979, abandoned. This application May 1, 1981, Ser. No. 259,670
Int. Cl.³ D01F 2/00
U.S. Cl. 264—187 7 Claims

1. A process of forming a shaped cellulosic product comprising

dissolving activated cellulose without significant depolymerization thereof in an amide selected from the group consisting of dimethylacetamide, 1-methyl-2-pyrrolidinone and mixtures thereof and from 3 to 15% by weight of the solution of lithium chloride, and

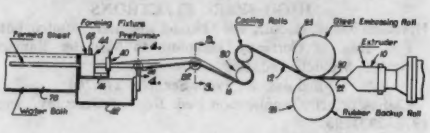
reconstituting the cellulose to form a shaped cellulosic product therefrom.

4,352,771

METHOD AND APPARATUS FOR CREATING RANDOM SHADOW PATTERNS IN FORMED VINYL SHEET ARTICLE

Robert J. Szabo, Kansas City, Mo., assignor to Variform Plastics, Inc., Kearney, Mo.

Filed Apr. 16, 1981, Ser. No. 254,632
Int. Cl.³ B29F 3/08; B29D 7/02
U.S. Cl. 264—210.2 15 Claims



1. A method of creating random shadow patterns in formed vinyl sheet including the steps of:

extruding a flat, hot web of vinyl material having a predetermined thickness and a predetermined distance between the edges thereof;

gathering said web towards the center thereof to reduce the distance between said edges;

preforming said web to further reduce the distance between said edges;

moving said web through a smooth-walled passage having a height greater than the thickness of said web while restraining said edges whereby to create wrinkles in said web to present a random pattern, rugose surface; and

cooling said web as it is moved through said passage whereby to create said formed vinyl sheet having random shadow patterns therein.

10. Apparatus for creating random shadow patterns in formed vinyl sheet comprising:

means for extruding a flat hot web of vinyl material having a predetermined thickness and a predetermined distance between the edges thereof;

means for gathering said web toward the center thereof to reduce the distance between said edges;

means for preforming said web by folding the same along predetermined longitudinally extending lines, to further reduce the distance between the edges thereof;

a forming fixture having a smooth-walled passage therein of a height greater than the thickness of the web and means for restraining the edges of the web to said further reduced distance apart whereby wrinkles are formed in said web as it is moved through said passage; and

means for cooling said web as it moves through said passage.

4,352,772

METHOD AND APPARATUS FOR INJECTION-MOLDING A MANIFOLD ONTO A SET OF HOLLOW ELEMENTS

Baruch J. Bezner, Tel Aviv, Israel, assignor to Helioset Advanced Technologies Ltd., Tel Aviv, Israel

Filed Jul. 11, 1980, Ser. No. 167,643
Claims priority, application Israel, Jul. 26, 1979, 57898
Int. Cl.³ B29C 6/04, 1/06
U.S. Cl. 264—229 12 Claims

1. A method for injection-molding at least a first part of a plastic manifold element onto an extruded, panel-forming plurality of juxtaposed, hollow elements, comprising the steps of:

introducing into one set of ends of said plurality of hollow elements protrusion means extending from a core means,

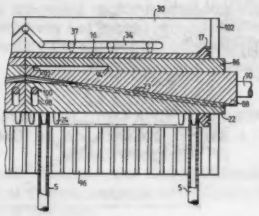
said core means defining the shape of at least part of the interior space of the final manifold to be formed;

clamping the region of said set of ends accommodating said protrusion means between a first and a second mold member, which two members, together with said core means, delimit the cavity of at least part of said final manifold;

injecting plastic material into said cavity;

removing said core means, and

removing said first and second mold members, whereby during the injection-molding process a strong bond is formed at the interface between the material of said plurality of juxtaposed, hollow elements and the material of the manifold being formed.



9. An apparatus for injection-molding a plastic manifold onto an extruded, panel-forming plurality of juxtaposed, hollow elements, which apparatus comprises: core means defining the shape of the interior space of the final manifold to be formed, protrusion means extending from said core means, which protrusion means is designed to substantially fit and fill at least one end section of said hollow elements to prevent the collapsing thereof during injection-molding of said manifold thereon, said core means comprising a core rail carrying said protrusion means, an extractor member in which said core rail is slidably arranged, and a core jacket substantially surrounding said extractor member, said core jacket, together with a portion of said core rail, defining the interior space of said final manifold.

4,352,773

METHOD OF MOUNTING A GRINDING WHEEL ON A SPINDLE

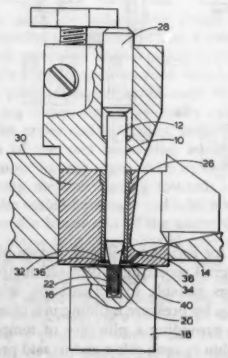
Trevor L. Jenkins, Luton, England, assignor to Norton Company, Worcester, Mass.

Filed Jun. 11, 1981, Ser. No. 272,793

Claims priority, application United Kingdom, Jun. 20, 1980, 8020156

Int. Cl.³ B29D *3/00*; B29C *5/00*

U.S. Cl. 264—262 **9 Claims**



1. A method for bonding the end of a tapered spindle in the central aperture of a grinding wheel in an injection mold that includes an injection die means having a hollow cylindrical die liner for holding the projecting end of a tapered spindle in said aperture, comprising placing the spindle to be mounted in the wheel in the hollow die liner with the projecting end of the spindle extending from the end of said liner; sealing the space between the end of the liner and the tapered portion of the spindle positioned within the liner against the flow of bond material into said space; centering the projecting end of the tapered spindle in the aperture in the wheel and sealing the wheel against said die to form a cavity defined by the wall of said aperture, the die means and the projecting end of said spindle; and then injecting a hardenable bonding material into said cavity and hardening said material to complete the bonding of the wheel to the spindle.

4,352,774

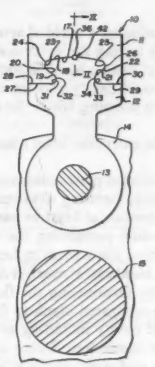
METHOD AND ARRANGEMENT FOR SUPPORT OF CONTACT ELEMENTS OF HAMMERMILLS AND THE LIKE

Michael E. Hornberger, Carlisle, Pa., assignor to The Frog, Switch & Manufacturing Company, Carlisle, Pa.

Filed Mar. 13, 1980, Ser. No. 129,978

Int. Cl.³ B29D *3/00*

U.S. Cl. 264—263 **2 Claims**



1. In a method of securing a contact element to a support element to be carried by said support element for contact with material to be treated, the steps of forming one of said elements with a groove having a longitudinal direction and having a substantially uniform cross-sectional shape with uniform cross-sectional dimensions along its length, forming the other of said elements with a tongue having a longitudinal direction and having a substantially uniform cross-sectional shape substantially the same as that of said groove and with cross-sectional dimensions such as to fit into said grooves with a close tolerance fit, forming first and second narrow and elongated recesses in interengageable surfaces of said groove and said tongue at positions such as to register to define a channel extending to an entrance opening at aligned edge portions of said surfaces when the full length of said tongue is in said groove, positioning one end of said tongue in alignment with one end of said groove and then moving said contact element relative to said support element to longitudinally slide said tongue in said groove to an installed condition in which substantially the full length of said tongue is in said groove and in which said first and second recesses register to define said channel having an entrance opening at aligned edge portions of said surfaces, then flowing a hardenable liquid bonding material through said entrance opening into said channel to fill said channel with said material, and allowing said material to harden to develop a solid resilient holding and locking element operative to resil-

iently oppose relative slideable movement of said contact and support elements away from said installed condition.

4,352,775
METHOD AND APPARATUS FOR PRODUCING MOLDED PLASTIC ARTICLES SUCH AS PACKAGING TUBES

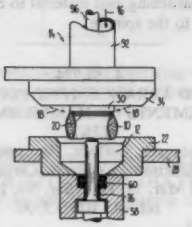
Karl Mägerle, Im vorderen Erb 1, 8700 Kusnacht, Switzerland

Filed Jul. 2, 1980, Ser. No. 165,396

Claims priority, application Switzerland, Jul. 12, 1979, 6502/79

Int. Cl.³ B29D *23/04*

U.S. Cl. 264—500 **6 Claims**



1. In a method producing a molded article from thermoplastic material in which during the extrusion of plasticized material from an extrusion head a blank is formed, transferred into an upwardly open mold cavity and formed into the shape of the molded article by pressing while the mold is being closed; the steps of:

(a) extruding at the extrusion head plasticized material in an annular flow;

(b) shaping the extruded plasticized material into an annular blank of lenticular, standing oval-resembling longitudinal cross-sectional profile, at least in part by controlling said annular flow, while permitting the extruded material to freely depend from the extrusion head;

(c) separating the blank, so shaped, from the extrusion head at least in part by terminating the flow; and

(d) permitting the separated blank to free fall into the mold cavity, the mold cavity including an axially directed pin, and the annular blank free falling so as to ring said pin while landing in said mold cavity whereby surface contact with the mold cavity is kept as small as possible; and

(e) forming a molded article from the deposited annular blank by pressing the deposited annular blank while closing the mold cavity.

4,352,776
APPARATUS AND METHOD FOR FABRICATING POLYCARBONATE SKYLIGHTS

Kent A. Weisner, Altamonte Springs, and Lester L. Walls, Jr., Winter Park, both of Fla., assignors to Kenergy Corporation, Orlando, Fla.

Continuation-in-part of Ser. No. 12,822, Feb. 16, 1979, Pat. No. 4,278,414. This application Feb. 2, 1981, Ser. No. 230,317

Int. Cl.³ B29C *17/00*

U.S. Cl. 264—522 **11 Claims**

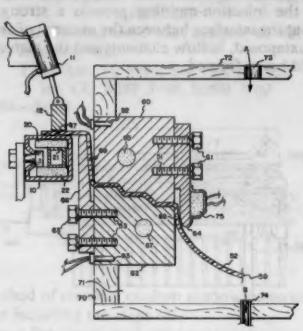
1. A method for forming skylight dome elements and the like in a polycarbonate plastic sheet utilizing apparatus having a heated clamp frame for clamping the perimeter of the plastic sheet, an oven for heating the plastic sheet, coacting perimeter molds to form stepped areas in the plastic sheet adjacent to the perimeter of the sheet, and a vacuum mold for forming a dome area in the plastic sheet, comprising the steps of:

preheating the clamp frame to a first temperature prior to use;

clamping a sheet of polycarbonate plastic around its perimeter region in the clamp frame;

preheating the perimeter region of the polycarbonate plastic sheet approximately to the first temperature by means of the preheated clamp frame;

heating the remainder of polycarbonate plastic sheet and clamp frame in the oven to a second temperature higher than the first temperature but lower than a temmperature which would permit the polycarbonate plastic sheet to sag, the first temperature having been selected to permit the perimeter region and the remainder of the polycarbonate plastic sheet to reach the second temperature at about the same time;



preheating the coacting perimeter molds to approximately the first temperature;

closing the preheated molds on the heated polycarbonate plastic sheet to form stepped areas therein immediately adjacent the clamp frames; and

drawing a vacuum on one surface of the heated polycarbonate plastic sheet to thereby form a dome therein.

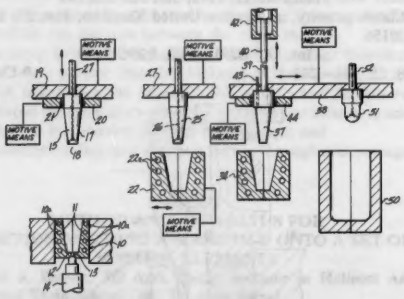
4,352,777
METHOD FOR FORMING HOLLOW PLASTIC OBJECTS

Emery I. Valyi, 5200 Sycamore Ave., Riverdale, N.Y. 10471

Continuation-in-part of Ser. No. 5,960, Jan. 24, 1979, Pat. No. 4,225,304, which is a division of Ser. No. 911,359, Jun. 1, 1978, Pat. No. 4,207,134. This application Feb. 11, 1980, Ser. No. 120,266

Int. Cl.³ B29C *17/07*

U.S. Cl. 264—538 **18 Claims**



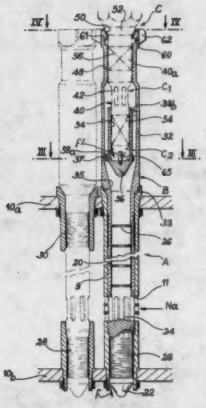
1. A method for forming oriented, blown objects of moldable plastic material requiring prolonged tempering cycles to obtain conditions suitable for orientation which comprises: forming a parison by pressure molding in a closed mold cavity on a first core; providing a plurality of tempering molds in spaced relationship to each other and to said pressure mold for retaining and tempering said parison in a prolonged tempering cycle prior to orientation and blowing: relatively moving a

first of said tempering molds and said first core into alignment with each other; transferring said parison from said first core to said first tempering mold; relatively moving said first core and first tempering mold to bring said parison into alignment with means for removing the parison from said first tempering mold and transferring said parison to at least one additional tempering mold spaced from said first tempering mold prior to orientation and blowing for prolonged tempering; providing a blow mold in spaced relationship with at least one of said tempering molds for forming said tempered parison into oriented, blown objects; removing said tempered parison from said at least one additional tempering mold by separate means at the end of the tempering cycle prior to orientation and blowing and placing same into said blow mold; and forming oriented, blown objects in said blow mold by means associated with said blow mold, whereby said tempering molds receive and release parisons seriatim and whereby the overall processing cycle is substantially unaffected by the number of tempering molds.

4,352,778
DEVICE FOR HOLDING AND SUPPLYING WITH LIQUID METAL AN ASSEMBLY FOR A NUCLEAR REACTOR CORE

Georges Arnaud, Manosque, and Gerard Chiarelli, Aix en Provence, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Dec. 7, 1979, Ser. No. 101,075
Claims priority, application France, Dec. 14, 1978, 78 35201
Int. Cl.³ G21C *3/14*
U.S. Cl. 376—365 **6 Claims**

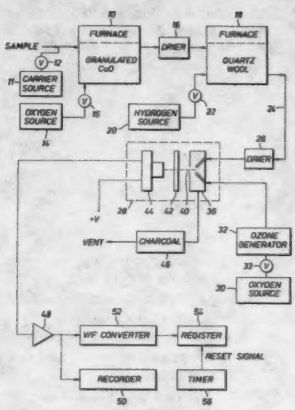


1. In a liquid metal cooled nuclear reactor having a core formed by a plurality of assemblies and a cross-member supporting the core provided with vertical hollow shores, said cross-member forming a reservoir for supplying said assemblies with high pressure liquid metal, each of the said assemblies having a leg comprising a generally cylindrical hollow body sealed at its upper end by a plug, means for holding and supplying each of the said assemblies comprising a hollow supporting member having a generally cylindrical shape, said hollow supporting member having towards its upper end an inner coaxial tube sealed by a base and which serves to receive with a clearance the lower end of the assembly leg, the latter being provided above said inner coaxial tube with at least one liquid metal supply opening and below said supply opening with means cooperating with said tube in order to create a pressure drop for liquid metal leakage flow, said hollow supporting member further having a lower part which is sealed at its lower end by a plug and which can be introduced with clearance into one of said shores, said lower part of the hollow supporting member being provided with a bearing surface by which said member rests on the upper end of said shore and with openings which coincide with openings made in the shore, means for regulating the liquid metal flow rate being provided in said lower part of the hollow supporting member above said openings in the shore and below said supply openings in the assembly leg, said lower part having on its outer face means for creating a pressure drop disposed below its supply openings, said last named means being able to create with the corresponding part of the shore a pressure drop for a liquid metal leakage flow directed towards the bottom of the cross-member.

4,352,779
CHEMILUMINESCENT SULFUR DETECTION APPARATUS AND METHOD

Robert E. Parks, Houston, Tex., assignor to Antek Instruments, Inc., Houston, Tex.

Filed Feb. 9, 1981, Ser. No. 232,891
Int. Cl.³ G01N *21/76*
U.S. Cl. 422—52 **6 Claims**



1. Apparatus for testing chemically bound sulfur, comprising:

(a) a first furnace having
- (1) input means connected to receive a specimen having chemically bound sulfur into said first furnace;
- (2) a particulate metal oxide in said first furnace selected to convert chemically bound sulfur into oxides of sulfur at a specified elevated temperature;
- (3) supply mean for providing oxygen to said first furnace;
- (4) heater means for maintaining said first furnace at the specified elevated temperature;
- (5) an output means from said first furnace for delivery of the oxides of sulfur formed in said first furnace;

(b) a second furnace having
- (1) heater means maintaining a specified temperature therein;
- (2) input means connected to said first furnace output means for providing the oxides of sulfur to said second furnace;
- (3) supply means for providing elemental hydrogen to said second furnace;
- (4) output means from said second furnace for outputting hydrogen sulfide resulting from the reaction of hydrogen and oxides of sulfur in the specimen in said second furnace;

(c) a reaction chamber having
- (1) input means connected to said second furnace output means for receiving hydrogen sulfide resulting from the specimen after reaction in said second furnace;
- (2) supply means connected to said reaction chamber to

provide ozone into said reaction chamber to react with the hydrogen sulfide forming chemiluminescent radiation;

(3) an opaque wall defining a portion of said reaction chamber; and

(4) a transparent port in said wall permitting only chemiluminescent light from said reaction chamber to pass therethrough;

(d) light sensitive means positioned to be responsive to light from said port and which forms an output proportionate to the quanta of light; and

(e) summation means connected to said light sensitive means to form a sum indicative of the quanta of light proportionate to the chemically bound sulfur in the specimen.

4,352,780

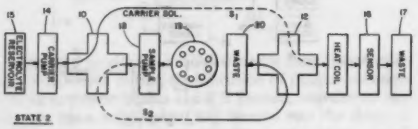
DEVICE FOR CONTROLLED INJECTION OF FLUIDS

Karl G. Schick, Whitefish Bay, Wis., assignor to Fiatron Systems, Inc., Oak Creek, Wis.

Continuation-in-part of Ser. No. 57,369, Jul. 13, 1979, Pat. No. 4,272,483. This application Jun. 9, 1980, Ser. No. 157,653

Int. Cl.³ G01N *21/00, 35/00, 35/08*

U.S. Cl. 422—67 **11 Claims**



1. A fluid handling device comprising:

means for supplying an electrolyte fluid,

means for supplying a fluid sample for analysis,

first and second fluid carrying channels,

first four-way valve means for simultaneously injecting said fluid sample into one of said channels and said electrolyte into the other of said channels,

a fluid displacement pump communicating the means for supplying the electrolyte fluid with said first valve means for displacement of electrolyte to said first valve means,

a sample pump communicating the means for supplying the fluid sample with said first valve means for displacement of electrolyte to said first valve means,

second four-way valve means for simultaneously receiving electrolyte fluid and fluid sample from said channels,

means for controlling the operation of said first and second valve means in response to an electrical impulse to direct the simultaneous flow of fluid sample from said first valve means into one of said channels and electrolyte fluid into the other of said channels and for controlling the second valve means for simultaneous flow of electrolyte fluid and fluid sample from said channels and through said second valve means with either the fluid sample or the electrolyte fluid flowing to means for analyzing the fluid sample and the other flowing to means for collecting the fluid, and

means for regulating the operation of said first and second valve means in timed relation to control the volume of fluids displaced by the sample pump and the fluid displacement pump.

4,352,781

COMBUSTION SYSTEM

Larry O'Brien, St. Joseph, Mich., assignor to Leco Corporation, St. Joseph, Mich.

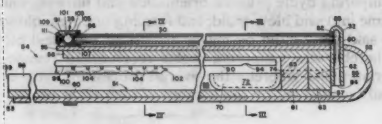
Filed Oct. 14, 1980, Ser. No. 196,781

Int. Cl.³ G01N *31/12*

U.S. Cl. 422—78 **12 Claims**

1. A combustion chamber for use in combusting a liquid or solid specimen into a gaseous state for subsequent analysis to determine the amount of one or more constituent elements contained in the specimen comprising:

an elongated combustion chamber continuously open at one end to receive samples to be combusted which are positioned in said chamber through said open end, said chamber enclosed at its opposite end and made of a material to withstand temperatures of combustion in excess of 3000° F., said combustion chamber including an exit port adjacent said enclosed opposite end and an area axially spaced from said exit port toward said open end for supporting a combustion boat thereon;



eduction tube means extending along and closely adjacent said combustion chamber externally thereto and having one end coupled to said exit port for communicating with the interior of said combustion chamber for withdrawing specimen gases therefrom from a position adjacent said enclosed end; and

baffle means positioned in said combustion chamber between said support area for a combustion boat and said exit port and including an adjustable aperture to provide an adjustable flow path for the gaseous by-products of combustion.

4,352,782

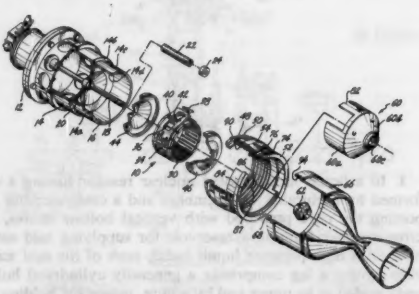
CATALYTIC GAS GENERATOR

James M. Daly, Kirkland, Wash., assignor to Rocket Research Company, Redmond, Wash.

Filed Feb. 20, 1981, Ser. No. 236,575

Int. Cl.³ F01N *3/10*

U.S. Cl. 422—179 **8 Claims**



1. In a catalytic gas generator including body means defining a generating chamber, a propellant inlet, a propellant outlet, and a generally cylindrical catalyst bed, the improvement comprising:

first means surrounding and radially confining said catalyst bed, said means being movable radially inwardly relative to said bed,

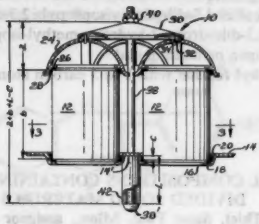
second means cooperating with said first means to apply a biasing force directed radially inwardly relative to said bed to move the first means radially inwardly and compress the bed as voids form therein during operation of the gas generator.

4,352,783

APPARATUS FOR MOUNTING A PLURALITY OF CATALYTIC ELEMENTS FOR TREATING LARGE VOLUMES OF EXHAUST GASES

Charles H. Bailey, Mt. Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Jun. 10, 1981, Ser. No. 272,157
Int. Cl.³ B01D 53/36; F01N 3/28, 7/16
U.S. Cl. 422—179 6 Claims



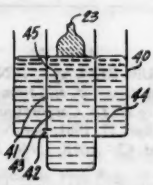
1. An exhaust treatment assembly for catalytically converting large volumes of gases comprising a large chamber having an inlet plenum, an outlet plenum and a bulkhead member separating the plenums, said bulkhead member containing a plurality of apertures and walled portions surrounding each aperture, each of said walled portions being concentric with its associated aperture and spaced radially therefrom so as to form an annular recess around each aperture, gasket means in said recesses and an axially channeled ceramic monolithic catalyst element having a first end positioned in each recess, a metallic end support member in retaining contact with the opposite end of each catalyst element, an axially transverse metallic force applying member arranged and constructed to apply an axial compression force to a plurality of end support members at one time, said end support member being of generally open construction to allow the free flow of gases therethrough, but having at least one contact portion for receiving a compression force from a portion of said axially transverse metallic force applying member and an assembly comprising a metallic nut and bolt which passes through the bulkhead member for transmitting axial compression forces applied by said force applying member to said end support members.

4,352,784

DOUBLE CRUCIBLE CZOCHRALSKI CRYSTAL GROWTH APPARATUS

Wen Lin, Titusville, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Filed May 25, 1979, Ser. No. 42,693
Int. Cl.³ C30B 15/12
U.S. Cl. 422—249 5 Claims



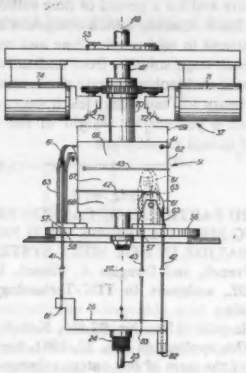
1. An apparatus for growing a single crystal from a melt comprising an inner crucible and an outer crucible, said inner crucible placed concentrically inside and at least a top portion thereof spaced from the walls of said outer crucible, means for allowing the flow of melt from said outer crucible to said inner crucible, said inner crucible having a reservoir for holding melt in said inner crucible after flow of melt from said outer crucible ceases.

4,352,785

CRYSTAL GROWER WITH TORQUE SUPPORTIVE COLLAPSIBLE PULLING MECHANISM

Winfrid O. E. Schellin, Emmaus, Pa., assignor to Western Electric Co., Inc., New York, N.Y.

Filed Jan. 4, 1982, Ser. No. 337,050
Int. Cl.³ C30B 15/32
U.S. Cl. 422—249 11 Claims



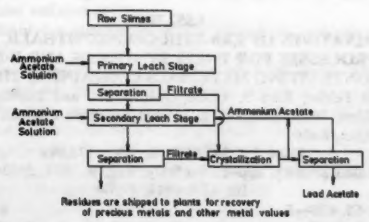
1. Apparatus for growing crystals, which comprises:
means for mounting a crystal;
at least two flexible cables for supporting said crystal mounting means such that the crystal is in coinciding alignment with a predetermined axis of said apparatus, at least one of said at least two flexible cables being in non-coincident relationship with such axis of said apparatus whereby said at least one cable, non-coincident with such axis supports a counter-torque about such axis to oppose rotational motion of such crystal about such axis as a result of a torque generated on the crystal; and
means for simultaneously winding said at least two cables to vertically translate said crystal mounting means within said apparatus.

4,352,786

TREATMENT OF COPPER REFINERY ANODE SLIME

Ying-Chu Hoh, Lung-Tan; Bao-Dein Lee, Taipei; Tieh Ma, Taipei; Wen-Shou Chuang, Taipei, and Wei-Ko Wang, Lung-Tan, all of Taiwan, assignors to Institute of Nuclear Energy Research, Taiwan

Filed Feb. 24, 1981, Ser. No. 237,770
Int. Cl.³ C01G 21/02
U.S. Cl. 423—98 13 Claims



1. A process for upgrading lead-containing anode slime

produced in the electrolytic refining of copper and for the recovery of lead from such slime comprising:

(a) contacting said anode slime in a primary leach stage with an ammonium acetate leach solution at an elevated temperature and for a period of time sufficient to provide a first leach solution which comprises a portion of the lead contained in said anode slime and separating a primary leach stage solution from undissolved anode slime residue; and

(b) contacting said undissolved anode slime residue from the primary leach stage in a secondary leach stage with additional ammonium acetate leach solution at an elevated temperature and for a period of time sufficient to provide a second leach solution which comprises a portion of the lead contained in said anode slime and separating a secondary leach stage solution from undissolved anode slime residue, said undissolved anode slime residue subsequent to said primary and secondary leach stages comprising less than about 6 percent by weight of the lead originally contained in said anode slime.

4,352,787

ULTRA-HARD PARTICLES OF CARBON PRODUCED BY REACTING METAL CARBIDE WITH NON-METAL HALIDE IN HOT MELT SYSTEM

Frederic A. French, and Douglas A. French, both of Portola Valley, Calif., assignors to TDC-Technology Development Corp., Canada

Continuation-in-part of Ser. No. 92,485, Nov. 8, 1979, Pat. No. 4,275,050. This application Jun. 22, 1981, Ser. No. 275,655

The portion of the term of this patent subsequent to Jun. 23, 1998, has been disclaimed.

Int. Cl.³ C01B *31/00*

U.S. Cl. 423—445 **21 Claims**

1. Ultra-hard particles having covalently bonded lattice structures composed largely of carbon and produced by reacting a carbide selected from the group consisting of acetylide carbides, interstitial carbides and other metal carbides with a halide or halogen reactant selected from the group consisting of $CH_nX_4Y_{(4-n)-A'}$, $C_2H_{n'}X_{A'}Y_{(6-n')-A'}$, $C_2H_{n''}X_{A''}Y_{(4-n''-)-A''}$, BX_3, C_6X_6, C_5X_5N, SX_2 and X_2 wherein X and Y are different halogens selected from the group consisting of chlorine, bromine, iodine and fluorine, and wherein A is an integer from 0 to 4, A' is an integer from 0 to 6 and A'' is an integer from 0 to 4, and wherein n is an integer from 0 to 4, n' is an integer from 0 to 6 and n'' is an integer from 0 to 4, wherein A, A', A'', n, n' or n'' is the same integer in any particular member selected and wherein $n+A=4$, $n'+A'=6$ and $n''+A''=4$, said reaction being carried out in a hot melt system having substantially no solvency capability for carbon comprising a molten solution of more than one metal halide wherein the metals are selected from the group consisting of Group I, Group II and Group III metals of the periodic table and the halides are selected from the group consisting of chlorine, bromine, iodine and fluorine, said reaction being carried out at temperature and pressure conditions sufficient to maintain the melt system in the liquid state.

4,352,788

DERIVATIVES OF 2,4,6-TRIIODO-ISOPHTHALIC ACID, PROCESSES FOR THEIR SYNTHESIS AND X-RAY CONTRASTING MATERIALS CONTAINING THESE

Ernst Felder, Riva S. Vitale, Switzerland, and Davide Pitre, Milan, Italy, assignors to Bracco Industria Chimica S.p.A., Milan, Italy

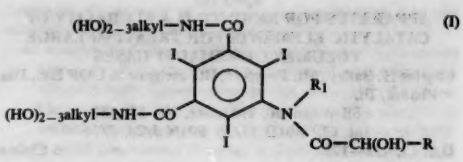
Filed Jul. 30, 1980, Ser. No. 173,698

Claims priority, application Italy, Aug. 9, 1979, 25026 A/79

Int. Cl.³ A61K *49/04*

U.S. Cl. 424—5 **6 Claims**

1. 5-(N-alkyl-α-hydroxyacylamino)-2,4,6-triiodoisophthalic-acid-bis-(hydroxyalkylamides) having the formula (I)



(I)

in which

$(OH)_{2-3}$alkyl is 1,3-dihydroxyisopropyl, 2,3-dihydroxypropyl or 1,3-dihydroxy-2-hydroxy-methyl-isopropyl,

R is hydrogen or methyl, and

R_1 is an alkyl residue with 1 to 5 carbon atoms.

4,352,789

AEROSOL COMPOSITIONS CONTAINING FINELY DIVIDED SOLID MATERIALS

Charles G. Thiel, Saint Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Mar. 17, 1980, Ser. No. 131,030

Int. Cl.³ A61K *9/14*

U.S. Cl. 424—46 **18 Claims**

1. A self-propelling, powder dispensing aerosol composition comprising between about 0.001 and 20 percent by weight of a finely-divided solid material coated with a dry coating of a perfluorinated surface-active dispersing agent which constitutes between about 0.1 to 20 percent by weight of said coated solid material, and suspended in a halogenated propellant in which said solid material and said perfluorinated surface-active dispersing agent are substantially insoluble.

4,352,790

MEDICAL PREPARATION CONTAINING PROSTAGLANDIN

Olof J. A. Johansson, Veberöd, and Ulf I. Ulmsten, Malmö, both of Sweden, assignors to Perstorp AB, Perstorp, Sweden

Filed Jan. 16, 1980, Ser. No. 112,563

Claims priority, application Sweden, Jan. 29, 1979, 7900737

Int. Cl.³ A61K *31/74, 31/215, 31/19*

U.S. Cl. 424—78 **10 Claims**

1. A stable medical preparation containing prostaglandin in the form of substantially dry particles and intended for intravaginal or intracervical application, said preparation comprising a crosslinked hydroxyl group containing polymer which is insoluble in water but has the capability of swelling in liquid containing water to form a gel, said polymer containing an effective amount of prostaglandin.

4,352,791

POTASSIUM REPLACEMENT THERAPY

Alejandro Zaffaroni, Atherton, and John Fara, Saratoga, both of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Filed Apr. 27, 1981, Ser. No. 257,540

Int. Cl.³ A61K *31/60, 33/14*

U.S. Cl. 424—153 **19 Claims**

1. A method for treating potassium depletion in an animal in need of potassium replacement, which method comprises administering orally to the animal from 15 milligrams to 1200 milligrams of potassium chloride and an effective amount of a member selected from the group consisting essentially of salicyclic acid and its pharmaceutically acceptable salicylate salts for lessening the incidence of unwanted side effects associated with the therapeutic use of potassium chloride.

4,352,792

3-ALKOXYFLAVONE ANTIVIRAL AGENTS

Hideo Ishitsuka, Yokohama; Haruyoshi Shirai, Isehara; Isao Umeda, Yokohama, and Yasuji Suhara, Yokohama, all of Japan, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Apr. 7, 1980, Ser. No. 137,637

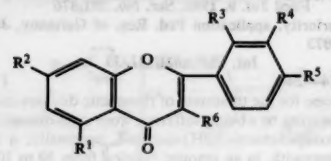
Claims priority, application United Kingdom, Apr. 10, 1979, 7912610; Feb. 25, 1980, 8006259

Int. Cl.³ C07H *15/20;* A61K *31/70*

U.S. Cl. 424—180 67 Claims

1. An anti-enteroviral composition comprising:

(a) as an active ingredient a compound of the formula:



I

wherein R^1 is hydroxy, lower alkoxy, lower alkanoyloxy, lower alkoxycarbonyloxy or nicotinoyloxy; R^2 is hydroxy or lower alkoxy; R^3 is hydrogen or lower alkoxy; R^4 is hydrogen, hydroxy or lower alkoxy; R^5 is hydroxy, lower alkoxy, lower alkanoyloxy, aminoacyloxy where its acyloxy group has 2 to 10 carbon atoms, glycosyloxy which is derived from a monosaccharide of 5 to 7 carbon atoms, a hydroxy-substituted dicarboxylic acid residue where its dicarboxylic acid group has 2 to 8 carbon atoms, amino, nicotinoyloxy or lower alkoxycarbonyloxy and R^6 is lower alkoxy, or pharmaceutically acceptable salts thereof,

in an amount which is effective as an anti-enteroviral agent; and

(b) a pharmaceutically acceptable carrier material.

4,352,793

PHARMACEUTICAL COMPOSITION COMPRISING BENCYCLANE FUMARATE AND CYCLODEXTRIN

Yoshiya Yamahira, Ibaraki; Takeshi Noguchi, Takatsuki; Keiji Fujioka, Ibaraki; Tetsuo Noguchi, Suita, and Shigeji Sato, Ibaraki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Apr. 8, 1980, Ser. No. 138,562

Claims priority, application Japan, Apr. 26, 1979, 54-52164; Dec. 4, 1979, 54-157151; Jan. 28, 1980, 55-9201; Feb. 13, 1980, 55-17042

Int. Cl.³ A61K *31/715*

U.S. Cl. 424—180 21 Claims

1. A pharmaceutical composition having anticonvulsant and vasodilatory activity comprising as a pharmaceutically active ingredient an effective amount of bencyclane fumarate and cyclodextrin in a molar ratio ranging between about 1:5 and 5:1.

4,352,794

BETA-CYCLODEXTRIN AS ANTI-ACNE AGENT

Jürgen Koch, Buchenalle 7c., Hamburg 54, Fed. Rep. of Germany

Filed Nov. 28, 1980, Ser. No. 211,232

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1979, 2947742

Int. Cl.³ A61K *31/715*

U.S. Cl. 424—180 8 Claims

1. A method of treating a patient suffering from acne, comprising topically applying to the acne beta-cyclodextrin in an acne treating effective amount, the beta-cyclodextrin being applied to the acne in a cosmetic or pharmaceutical acceptable carrier, the carrier containing substantially no organic compounds with molecular weights between 100 and 10,000 daltons.

4,352,795

7-β-D-ARABINOFURANOSYL-7H-PYRROLO[2,3-d]PYRIMIDINE COMPOUNDS AND METHODS FOR THEIR PRODUCTION

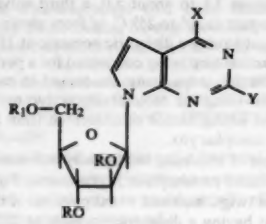
P. Dan Cook, Ann Arbor, Mich., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Jan. 29, 1981, Ser. No. 229,471

Int. Cl.³ A61K *31/70;* C07H *19/04*

U.S. Cl. 424—180 12 Claims

1. The compound having the structural formula:



and the pharmaceutically acceptable acid addition salts and when R_1 is phosphate ammonium ion, alkali metal cation, and alkaline earth metal cation salts thereof wherein when Y is NH_2, X is NH_2 or OH; and when Y is hydrogen, X is NH_2, OH or SH, with the proviso that when Y, R and R_1 are all hydrogen X is not NH_2 or OH; R is hydrogen or acyl containing 2 to 6 carbon atoms; and R_1 is hydrogen, acyl containing 2 to 6 carbon atoms or phosphate.

12. A method of treating Herpes simplex viral infection by the administration to a host of an effective amount of the component according to claim 1.

4,352,796

PHARMACEUTICALLY ACTIVE PLANT EXTRACT AND COMPOSITION THEREOF

Shigeru Arichi, and Yoshihiro Uchida, both of Osaka, Japan, assignors to Osaka Chemical Laboratory Co., Ltd., Osaka, Japan

Filed Jun. 11, 1980, Ser. No. 158,598

Claims priority, application Japan, Jun. 14, 1979, 54/75349

Int. Cl.³ A61K *35/78*

U.S. Cl. 424—195 9 Claims

1. A substantially alkaloid free aqueous extract of a steamed or powdered aconite root selected from the group consisting of *Aconitum japonicum* Thunberg or *Aconitum sinense* Siebold prepared by the process comprising:

(a) extracting said aconite root with water, a lower aliphatic alcohol containing water, or a lower aliphatic alcohol to form an extract of said aconite root;

(b) concentrating said extract or drying it by evaporation under reduced pressure;

(c) dissolving said extract in a slightly basic aqueous solution;

(d) treating said aqueous solution with a fat soluble organic solvent selected from the group consisting of chloroform, ethylether, benzene, hexane, toluene, ligroin and petroleum ether until the resulting aqueous solution shows a negative reaction against an alkaloid detecting reagent, thereby removing alkaloids;

(e) neutralizing said aqueous solution; and

(f) concentrating said aqueous solution as in step (b), whereby a substantially alkaloid-free aqueous extract of said aconite root is obtained.

4,352,797

BIOLOGICALLY ACTIVE EXTRACTS FROM *MYRISTICA CASTANEIFOLIA* (MYRISTICACEAE) FIJI AND A METHOD OF OBTAINING SAME

Sidney M. Hecht, Charlottesville, Va., assignor to Wofor AG, Giswil, Switzerland

Filed Jul. 2, 1981, Ser. No. 280,087
Int. Cl.³ A61K *35/78*
U.S. Cl. 424—195 13 Claims

1. Biologically active materials from the plant *Myristica castaneifolia,* Myristicaeae, Fiji, the materials being produced by the process comprising extracting the twigs, bark and wood portions of the plant with a first solvent having a dielectric constant at 20° to 25° C. of from about 1.8 to about 2.0, a second solvent having a dielectric constant at 20° to about 25° C. of from about 3.5 to about 5.0, a third solvent having a dielectric constant at 20° to 25° C. of from about 15 to 35, and a fourth solvent having a dielectric constant at 25° C. of about 78, each extraction step being conducted for a period of 1 to 10 days, all extraction steps being conducted at room temperature, and recovering the biologically active materials which are capable of killing tumor cells derived from human carcinoma of the nasopharynx.

7. A process of obtaining biologically active materials from the plant *Myristica castaneifolia,* Myristicaeae, Fiji, comprising extracting the twigs, bark and wood portions of the plant with a first solvent having a dielectric constant at 20° to 25° C. of from about 1.8 to 2.0, a second solvent having a dielectric constant at 20° to about 25° C. of from about 3.5 to about 5.0, a third solvent having a dielectric constant at 20° to 25° C. of from about 15 to 35, and a fourth solvent having a dielectric constant at 25° C. of about 78, each extraction step being conducted for a period of 1 to 10 days, all of the extraction steps being conducted at room temperature, and recovering the biologically active materials which are capable of killing tumor cells derived from human carcinoma of the nasopharynx.

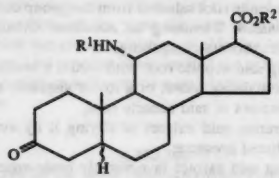
4,352,798

11 α-AMINO-ANDROSTANES

Gordon H. Phillipps, Wembley; David C. Humber, Ealing; George B. Ewan, Northolt, and Barry A. Coomber, Pinner, all of England, assignors to Glaxo Group Limited, London, England

Filed Jul. 15, 1981, Ser. No. 283,429
Claims priority, application United Kingdom, Jul. 16, 1980, 8023295; Mar. 2, 1981, 8106488
Int. Cl.³ A61K *31/56*
U.S. Cl. 424—242 10 Claims

1. Compounds of formula



(I)

(wherein:

R^1 is a hydrogen atom, a C_{1-8} alkyl group or a C_{3-7} cycloalkyl group; and

R^2 is a hydrogen atom, a C_{1-6} alkyl group or a C_{3-6} cycloalkyl group; and the D-homo analogues thereof having the group $-CO_2R^2$ (wherein R^2 is as defined above) at the 17aβ-position and salts and zwitterionic forms thereof.

10. A method of treatment or prophylaxis of a human or animal subject suffering from or liable to ventricular dysrhythmias which comprises administering to said subject an effective amount of one or more compounds as claimed in claim 1.

4,352,799

2-PHENYL-1,2-BENZISOSELENAZOL-3(2H)-ONE CONTAINING PHARMACEUTICAL PREPARATIONS AND PROCESS FOR THE TREATMENT OF RHEUMATIC DISEASES

Marcel Renson, Jupille, Belgium; Eugen Etschenberg, and Johannes Winkelmann, both of Cologne, Fed. Rep. of Germany, assignors to A. Nattermann & Cie GmbH, Cologne, Fed. Rep. of Germany

Filed Jul. 9, 1981, Ser. No. 281,876
Claims priority, application Fed. Rep. of Germany, Jul. 17, 1980, 3027073
Int. Cl.³ A61K *31/33*
U.S. Cl. 424—244 1 Claim

1. A process for the treatment of rheumatic diseases comprising administering to a being suffering from such disease 2-phenyl-1.2-benzisoselenazol-3(2H)-one and, optionally, a carrier material therewith, in an amount ranging from 10 to 1000 mg per day.

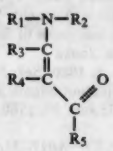
4,352,800

ADJUVANT FOR PROMOTING ABSORPTION OF THERAPEUTICALLY ACTIVE SUBSTANCES THROUGH THE DIGESTIVE TRACT

Akira Kamada, Suita, Japan, assignor to Kyoto Yakuhin Kyogo Kabushiki Kaisha, Kyoto and Sawai Seiyaku Kabushiki Kaisha, Osaka, both of, Japan

Division of Ser. No. 67,451, Aug. 17, 1979, Pat. No. 4,277,465. This application Nov. 26, 1980, Ser. No. 210,578
Claims priority, application Japan, Aug. 26, 1978, 53-104130; Jul. 30, 1979, 54-97931
Int. Cl.³ A61K *31/54, 31/495, 31/43*
U.S. Cl. 424—246 17 Claims

1. A pharmaceutical composition for absorption through the digestive tract, which comprises a therapeutically effective amount of a β-lactam antibiotic and an absorption promoting amount of an enamine derivative of the formula



wherein

is the residue of an organic aminocarboxylic acid or organic aminosulfonic acid having a hydrogen atom removed from the amino group thereof, the carboxyl or sulfo group in said residue being optionally in the form of an alkali metal salt or ester; wherein one of R_1 and R_2 is a carboxy or sulfo substituted alkyl of 1 to 6 carbon atoms, cycloalkyl of 5 to 6 carbon atoms, phenyl or naphthyl group and the other of R_1 and R_2 is hydrogen, lower alkyl or phenyl, R_3 is a hydrogen atom, a lower alkyl group or a lower alkoxy group, R_4 is a hydrogen atom, a lower alkyl group or a lower alkoxycarbonyl group, R_5 is a lower alkyl group, a lower alkoxy group which may optionally be substituted by hydroxyl, carboxyl or lower alkoxycarbonyl, or a lower alkylamino group which is substituted by hydroxyl, carboxyl or lower alkoxycarbonyl.

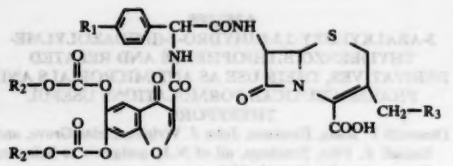
4,352,801

CEPHEM DERIVATIVES AND ANTIBACTERIAL AGENTS COMPRISING SAID COMPOUNDS

Seiichiro Nomoto; Hironori Ikuta, both of Tokyo; Yoshimasa Machida, Wako; Shigeto Negi, Kodaira; Isao Sugiyama, Tokyo; Hiroshi Yamauchi, Gifu; Kenro Nakatsuka, Matsudo, and Isao Saito, Sakura, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Filed Dec. 19, 1980, Ser. No. 218,402
Claims priority, application Japan, Oct. 7, 1980, 55-139269
Int. Cl.³ C07D *501/36*
U.S. Cl. 424—246 5 Claims

1. A cephem derivative represented by the formula:



wherein R_1 represents hydrogen or hydroxyl, R_2 represents lower alkyl or chloro-substituted lower alkyl, and R_3 represents lower alkanoyloxy or carboxyalkyl substituted tetrazolylthio or a pharmaceutically acceptable salt thereof.

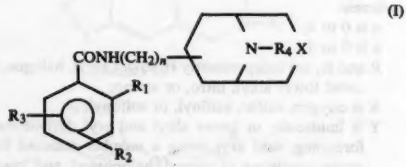
4,352,802

BICYCLO[3.3.1]NONYL-BENZAMIDE

Frank E. Blaney, London, England, assignor to Beecham Group Limited, England

Filed Jun. 1, 1981, Ser. No. 268,741
Claims priority, application United Kingdom, Jun. 10, 1980, 8019017
Int. Cl.³ A61K *31/54, 31/535;* C07D *279/16, 265/36*
U.S. Cl. 424—246 13 Claims

1. A compound of the formula (I) or a pharmaceutically acceptable salt thereof:



characterised in that:

X is oxygen or sulphur;

R_1 is a C_{1-6} alkoxy or C_{1-6} alkylthio group;

R_2 and R_3 are the same or different and are hydrogen, halogen, CF_3, C_{1-7}acyl, C_{1-7} acylamino or amino, aminocarbonyl or aminosulphonyl optionally substituted by one or two C_{1-6} alkyl groups, C_{1-6} alkylsulphonyl, C_{1-6} alkylsulphinyl, C_{1-6}alkoxy, C_{1-6} alkylthio, hydroxy or nitro or R_1 and R_2 taken together are methylenedioxy or ethylenedioxy in which case R_3 is any one of the groups given for R_2 and R_3 above;

R_4 is C_{1-7} alkyl or a group $-(CH_2)_sR_5$ where s is 0 to 2 and R_5 is a C_{3-8} cycloalkyl group, or a group $-(CH_2)_tR_6$ where t is 1 or 2 and R_6 is a phenyl group optionally substituted by one or two substituents selected from C_{1-6} alkyl, C_{1-4}alkoxy, trifluoromethyl and halogen, or a thienyl group; and

n is 0 to 2;

and there are at least two carbon atoms between the benzamide and heterogranatane ring nitrogen atoms.

12. A pharmaceutical composition having dopamine antagonist activity comprising an effective amount of a compound according to claim 1 or a hydrate or a pharmaceutically acceptable salt thereof, together with a pharmaceutically acceptable carrier.

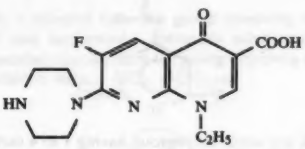
4,352,803

NOVEL NAPHTHYRIDINE DERIVATIVES, INTERMEDIATES THEREOF, PROCESSES FOR PREPARATION THEREOF, AND USE THEREOF

Jun-ichi Matsumoto, Takatsuki; Yoshiyuki Takase, Amagasaki, and Yoshiro Nishimura, Neyagawa, all of Japan, assignors to Dainippon Pharmaceutical Co., Ltd., Osaka, Japan and Laboratoire Roger Bellon, Neuilly sur Seine, France

Division of Ser. No. 68,966, Aug. 23, 1979. This application May 18, 1981, Ser. No. 264,824
Claims priority, application Japan, Aug. 25, 1978, 53/104238; Dec. 20, 1978, 53/157939; Dec. 29, 1978, 53/162095
Int. Cl.³ A61K *31/495;* C07D *471/04*
U.S. Cl. 424—251 6 Claims

3. A method for the treatment of a bacterial infectious disease which comprises administering to a warm-blooded animal suffering from such disease an antibacterially effective amount of a 1,8-naphthyridine compound



or a non-toxic pharmaceutically acceptable salt thereof.

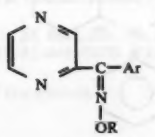
4,352,804

OXIME ETHERS, THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Jacob A. van Zorge, Ameide, Netherlands, assignor to ACF Chemiefarma NV, Netherlands

Filed Jul. 11, 1979, Ser. No. 56,529
Claims priority, application United Kingdom, Jul. 25, 1978, 30952/78
Int. Cl.³ A61K *31/495;* C07D *241/12*
U.S. Cl. 424—250 8 Claims

1. A compound of the formula:



or an N-oxide thereof, or a pharmaceutically acceptable salt of said compound or said N-oxide, wherein:

Ar is phenyl, thienyl, furyl or pyridinyl, said phenyl being unsubstituted or mono substituted by halogen, C_{1-6} alkyl or C_{1-6} alkoxy,

R is C_{1-3} alkyl, C_{3-4} alkenyl, C_{3-4} alkynyl, cyano C_{1-3} alkyl or aminoalkyl with the formula $-(CH_2)_qNR^3R^4$, wherein q is 2 or 3, R^3 and R^4 are each hydrogen or C_{1-3} alkyl.

4,352,805

METHODS OF TREATING PSYCHOSIS

John M. McCall, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 72,658, Sep. 5, 1979, which is a division of Ser. No. 847,371, Oct. 31, 1977, Pat. No. 4,179,510. This application Oct. 10, 1980, Ser. No. 196,192

The portion of the term of this patent subsequent to Dec. 18, 1996, has been disclaimed.

Int. Cl.³ A61K *31/47, 31/495*

U.S. Cl. 424—250 2 Claims

1. A method of treating psychosis in humans which comprises administering systemically to humans an antipsychotic dose of 2-[(1,3,4,5-tetrahydro-7,8-dimethoxy-2-benzoxepin-1-yl)methyl]-4-(2-pyridyl)piperazine.

4,352,806

SELECTED 2-TRICHLOROMETHYL-4-PYRIMIDINYL CARBOXYLIC ESTERS AND THEIR USE AS FUNGICIDES

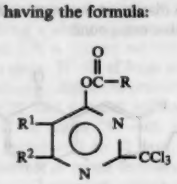
Lawrence E. Katz, Orange, and Walter A. Gay, Cheshire, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Nov. 13, 1981, Ser. No. 321,032

Int. Cl.³ A01N *43/54;* C07D *234/36*

U.S. Cl. 424—251 23 Claims

1. A compound having the formula:



wherein R is a lower alkyl group having 1 to 4 carbon atoms, a lower alkenyl group having 1 to 4 carbon atoms, a lower halo alkyl group having 1 to 4 carbon atoms or an unsubstituted or substituted phenyl group; R^1 is hydrogen or halo; and R^2 is a lower alkyl group having 1 to 4 carbon atoms.

4,352,807

HEXAHYDRO-TRANS-PYRIDOINDOLE NEUROLEPTIC AGENTS

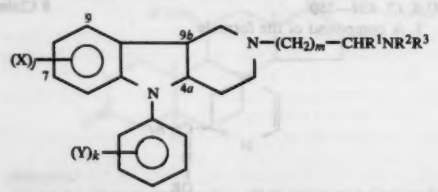
Willard M. Welch, Mystic, and Charles A. Harbert, Waterford, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 61,573, Jul. 30, 1979, Pat. No. 4,252,811. This application Aug. 28, 1980, Ser. No. 182,177

Int. Cl.³ C07D *471/14;* A61K *31/445*

U.S. Cl. 424—256 15 Claims

1. A (+) enantiomeric, a mixture of (+) and (−) enantiomeric or (+) racemic hexahydro-trans-4a,9b-1(H)pyridoindole derivative of the formula



or a pharmacologically acceptable salt thereof, wherein

j and k are independently 1 or 2;

m is 1 to 8;

X and Y are independently H, F, Cl, Br, OCH_3, CH_3 or CH_2CH_3;

R^1 is H, alkyl of 1 to 5 carbons, Ph or the mono or disubstituted form of Ph, the mono or disubstituent being F, Cl, Br, OCH_3, CH_3 or CH_2CH_3;

R^2 is H, alkyl of 1 to 5 carbons, Ph, CH_2Ph or the mono or disubstituted form of Ph or CH_2Ph, the mono or disubstituent being F, Cl, Br, OCH_3, CH_3 or CH_2CH_3; and

R^3 is alkanoyl of 1 to 8 carbons, alkoxycarbonyl of 2 to 8 carbons, benzoyl, phenylacetyl, alkylsulfonyl of 1 to 8 carbons, phenylsulfonyl or a ring mono or disubstituted form of benzoyl, phenylacetyl, or phenylsulfonyl, the mono or disubstituent being F, Cl, Br, OCH_3, —OCH_2O—, CH_3 or CH_2CH_3.

4,352,808

3-ARALKYLOXY-2,3-DIHYDRO-2-(IMIDAZOLYLMETHYL)BENZO(B)THIOPHENES AND RELATED DERIVATIVES, THEIR USE AS ANTIMICROBIALS AND PHARMACEUTICAL FORMULATIONS USEFUL THEREFORE

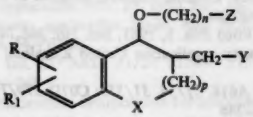
Dinanath F. Rane, Emerson; John J. Wright, Cedar Grove, and Russell E. Pike, Stanhope, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Dec. 12, 1980, Ser. No. 215,948

Int. Cl.³ A01N *43/42, 43/50;* C07D *405/08, 215/12*

U.S. Cl. 424—258 24 Claims

1. A compound selected from the group consisting of a compound defined by formula:



wherein

n is 0 to 4;

p is 0 or 1;

R and R_1 are independently H, lower alkyl, halogen, halogenated lower alkyl, nitro, or amino;

X is oxygen, sulfur, sulfinyl, or sulfonyl;

Y is imidazole, or lower alkyl and aryl derivatives of the foregoing, said aryl being a member selected from the group consisting of phenyl, halophenyl, and loweralkylphenyl;

Z is a member selected from the group consisting of alkyl of 1 to 10 carbons, alkenyl of 3 to 10 carbons, alkynyl, of 3 to 10 carbons, cycloalkyl of 3 to 6 carbons, and heterocyclic aromatic groups selected from the group consisting of 2-thienyl, 3-thienyl, pyridyl, quinolyl, thiazolyl and furanyl, and the lower alkyl and halogen substituted derivatives thereof, provided that when n is 0, Z is not 1-alkynyl; and where n is 1 to 4, Z is also a member selected from the group consisting of phenyl, phenyl substituted by lower alkyl, halogen, or N-(N'-lower alkanoyl-piperazine), alkoxy of 1 to 10 carbons, alkylthio of 1 to 10 carbons, aryloxy, and arylthio, wherein said aryl moiety is a member selected from the group consisting of phenyl, halophenyl and lower alkyl phenyl;

and the pharmaceutically acceptable acid addition salts thereof.

15. A composition useful for inhibiting the growth of fungi, bacteria or protozoa which comprises an antifungally, antibacterially, or antiprotozoally effective amount of a compound of claim 1 in admixture with a carrier.

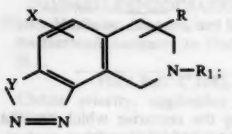
4,352,809

METHOD OF PRODUCING ALPHA$_2$ ANTAGONISM

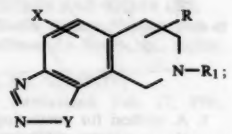
William E. Bondinell, Cherry Hill, N.J.; Robert M. DeMarinis, Ardmore, Pa.; Jacob P. Hieble, and Robert G. Pendleton, both of Philadelphia, Pa., assignors to Smithkline Corporation, Philadelphia, Pa.

Filed Sep. 4, 1981, Ser. No. 299,435
Int. Cl.^{3} A61K *31/47*
U.S. Cl. 424—258 7 Claims

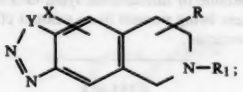
1. A method of producing alpha$_2$ antagonist activity which comprises administering to an animal requiring said treatment an amount sufficient to produce said activity a chemical compound of the formula selected from the group consisting of:



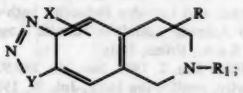
Formula I



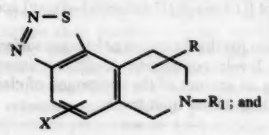
Formula II



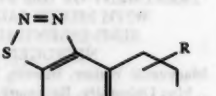
Formula III



Formula IV



Formula V



Formula VI

in which:

Y is sulfur or oxygen;

when Y is sulfur, X is hydrogen, halogen, or trifluoromethyl, and R and R_1 are hydrogen or lower alkyl of from 1 to 3 carbon atoms; and

when Y is oxygen, X, R and R_1 are hydrogen;

or a pharmaceutically acceptable acid addition salt thereof.

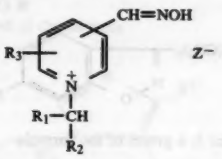
4,352,810

1-SUBSTITUTED HYDROXYIMINOMETHYL-PYRIDINIUM SALTS, WITH AN ACTIVITY AGAINST ORGANOPHOSPHATE POISONINGS

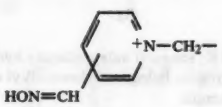
Hendrik P. Benschop, Pijnacker; Larry A. Kepner, Delft, and Leonardus P. A. de Jong, Bleiswijk, all of Netherlands, assignors to Nederlandse Centrale Organisatie Voor Toegepast-Natuurwetenschappelijkonderzoek, The Hague, Netherlands

Filed Jul. 21, 1980, Ser. No. 170,625
Claims priority, application Netherlands, Jul. 26, 1979, 7905789
Int. Cl.^{3} A61K *31/38, 31/425, 31/44*
U.S. Cl. 424—263 4 Claims

1. A method of protecting and treating warm-blooded animals from organophosphate poisoning comprising administering to warm-blooded animals an amount of at least one compound of the formula



wherein R_1 is selected from the group consisting of benzyl, thiophenyl and isothioazolyl optionally substituted with at least one member selected from the group consisting of methyl, methoxy, chloro, iodo, $-NO_2$, $-CH_3$ and



R_2 is selected from the group consisting of hydrogen, methyl and phenyl, R_3 is selected from the group consisting of hydrogen, and ethyl and Z is a non-toxic, pharmaceutically acceptable anion sufficient to prevent or treat organophosphate poisoning.

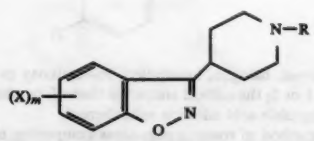
4,352,811

3-(1-SUBSTITUTED-4-PIPERIDYL)-1,2-BENZISOXAZOLES

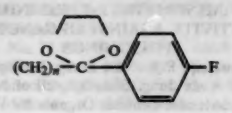
Joseph T. Strupczewski, and Richard C. Allen, both of Flemington, N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Filed Nov. 12, 1981, Ser. No. 319,872
Int. Cl.^{3} A61K *31/445;* C07D *413/04, 413/14*
U.S. Cl. 424—267 49 Claims

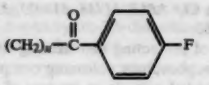
1. A compound of the formula



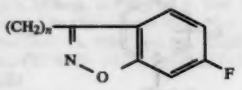
wherein R is a group of the formula



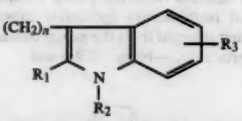
wherein n is 2 or 3; a group of the formula



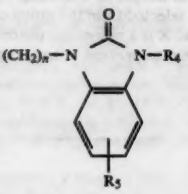
wherein n is 2 or 3; a group of the formula



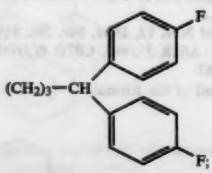
wherein n is 2 or 3; a group of the formula



wherein R_1 and R_2 are each independently hydrogen or loweralkyl, R_3 is hydrogen, halogen or loweralkyl and n is 2 or 3; a group of the formula



wherein R_4 is hydrogen or loweralkyl, R_5 is hydrogen, halogen or loweralkyl; and n is 2 or 3; and a group of the formula



X is hydroen, halogen, loweralkyl, loweralkoxy or hydroxy; and m is 1 or 2; the optical antipodes thereof; or pharmaceutically acceptable acid addition salts thereof.

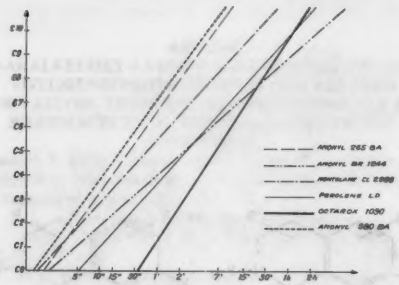
48. A method of treating psychoses comprising administering to a mammal in need of psychoses treatment a psychoses-treating, effective amount of a compound as defined in claim **1**.

4,352,812

METHOD OF COMBATING CERCARIAE USING CERTAIN AMPHOTERIC SURFACE ACTIVE AGENTS

Claude Combes, Perpignan; Jean Arnaudis; Germaine Arnaudis, both of Castres, and Lucien Marcou, St-Maur, all of France, assignors to Produits Chimiques de la Montagne Noire, Paris, France

Filed Aug. 18, 1980, Ser. No. 178,984
Claims priority, application France, Aug. 31, 1979, 79 21941; Apr. 14, 1980, 80 08533
Int. Cl.³ A01N *43/50, 37/30*
U.S. Cl. 424—273 R **4 Claims**



1. A method for combating the cercariae which are the causative organisms of bilharziasis, which comprises contacting said cercariae with at least one amphoteric surface active agent of the betaine or imidazoline type, said amphoteric surface active agent being present in an amount effective to combat the said cercariae.

4,352,813

[(1-BENZYL-1H-INDAZOL-3-YL)OXY] ACETIC ACID SALT WITH L. LYSINE

Bruno Silvestrini, and Leandro Baiocchi, both of Rome, Italy, assignors to Aziende Chimiche Riunite Angelini Francesco A.C.R.A.F. S.p.A., Rome, Italy

Filed Jun. 2, 1981, Ser. No. 269,923
Claims priority, application Italy, Jul. 29, 1980, 23768 A/80
Int. Cl.³ A61K *31/415;* **C07D** *231/56*
U.S. Cl. 424—273 N **3 Claims**

1. A salt of [(1-benzyl-1H-indazol-3-yl)oxy] acetic acid with L. lysine.

3. A method for the treatment of humans suffering from high blood lipid levels comprising orally administering to said human being an amount of the compound of claim **1** effective to decrease high blood lipid levels.

4,352,814

TREATMENT OF HEPATIC AND RENAL DISORDERS WITH MIXED SALTS OF ESSENTIAL OR SEMI-ESSENTIAL AMINO ACIDS AND NITROGEN-FREE ANALOGS

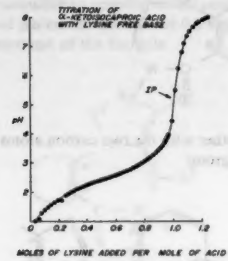
Mackenzie Walser, Ruxton, Md., assignor to The Johns Hopkins University, Baltimore, Md.

Division of Ser. No. 31,274, Apr. 18, 1979, Pat. No. 4,296,127. This application Sep. 8, 1981, Ser. No. 300,336
Int. Cl.³ A61K *31/195, 31/415*
U.S. Cl. 424—273 R **6 Claims**

1. A composition useful for providing essential and semi-essential amino acids to the body for the treatment of renal disease in humans, comprising the reaction product of the following compounds in approximately the indicated molar proportions:

4 parts alpha-keto-isovaleric acid
1 part alpha-ketoisocaproic acid
1 part alpha-keto-beta-methylvaleric acid

1 part histidine
2 part threonine
2 part lysine



said reaction product formed in aqueous medium followed by removal of water.

4,352,815

IMIDAZO-BENZODIAZEPINES AND THEIR USE

Walter Hunkeler, Magden, and Emilio Kyburz, Reinach, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

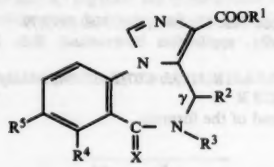
Filed Feb. 4, 1982, Ser. No. 345,852

Claims priority, application Switzerland, Feb. 27, 1981, 1338/81

Int. Cl.³ A61K *31/55*; C07D *487/04*

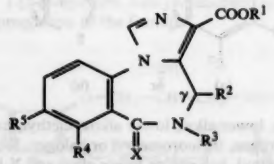
U.S. Cl. 424—273 R **8 Claims**

1. A compound of the formula



wherein R^1 is methyl, ethyl or isopropyl, one of R^4 and R^5 is hydrogen and the other is nitro or cyano, and either R^2 is hydrogen and R^3 is hydrogen or lower alkyl or R^2 and R^3 together are dimethylene, trimethylene or propenylene and the carbon atom denoted as γ has the (S)- or (R,S)-configuration, and X is an oxygen or sulphur atom, and pharmaceutically acceptable acid addition salts thereof.

7. A method of antagonising in a patient the central-depressant, muscle relaxant, ataxic, blood pressure-lowering and respiratory-depressant properties of 1,4 benzodiazepines having tranquillising activity which comprises the daily administration to said patient of from about 0.2 mg to about 500 mg of a compound of the formula



wherein R^1 signifies methyl, ethyl or isopropyl, one of R^4 and R^5 signifies hydrogen and the other signifies nitro or cyano, and either R^2 signifies hydrogen and R^3 signifies hydrogen or lower alkyl or R^2 and R^3 together signify dimethylene, trimethylene or propenylene and the carbon atom denoted as γ has the (S)- or (R,S)-configuration, and X signifies an oxygen or sulphur atom,
and their pharmaceutically acceptable acid addition salts.

4,352,816

AZETO-IMIDAZO-DIAZEPINES AND THEIR USE

Walter Hunkeler, Magden, and Emilio Kyburz, Reinach, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

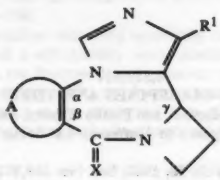
Filed Feb. 16, 1982, Ser. No. 349,405

Claims priority, application Switzerland, Feb. 27, 1981, 1339/81

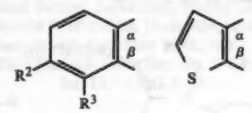
Int. Cl.³ A61K *31/55*; C07D *513/22*, *487/14*

U.S. Cl. 424—273 R **8 Claims**

1. A compound of the formula



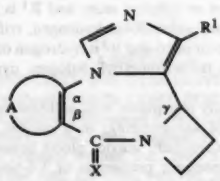
wherein A together with the two carbon atoms denoted as α and β is the group



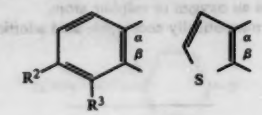
(a) or (b)

R^1 is hydrogen, lower alkyl, lower alkoxymethyl, halogen, nitro or a group of the formula $-COOR^4$, R^2 is hydrogen, trifluoromethyl or halogen, R^3 is hydrogen, trifluoromethyl, halogen or lower alkyl, R^4 is methyl, ethyl or isopropyl and X is an oxygen or sulphur atom and the carbon atom denoted as γ has the (S)- or (R,S)-configuration, and pharmaceutically acceptable acid addition salts thereof.

7. A method of antagonising in patients the central-depressant, muscle relaxant, ataxic, blood pressure-lowering and respiratory-depressant properties of 1,4-benzodiazepines having tranquilising activity which comprises daily administering to such patient from about 0.2 mg to about 500 mg of a compound of the formula



wherein A together with the two carbon atoms denoted as α and β is the group



(a) or (b)

R^1 is hydrogen, lower alkyl, lower alkoxymethyl, halogen, nitro or a group of the formula —$COOR^4$, R^2 is hydrogen, trifluoromethyl or halogen, R^3 is hydrogen, trifluoromethyl, halogen or lower alkyl, R^4 is methyl, ethyl or isopropyl and X is an oxygen or sulphur atom and the carbon atom denoted as γ has the (S)- or (R,S)-configuration, or a pharmaceutically acceptable acid addition salt thereof.

4,352,817

IMIDAZO-DIAZEPINES AND THEIR USE

Walter Hunkeler, Magden, and Emilio Kyburz, Reinach, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

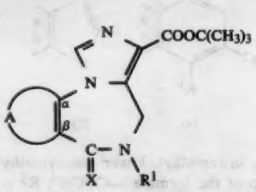
Filed Feb. 18, 1982, Ser. No. 349,802

Claims priority, application Switzerland, Feb. 27, 1982, 1340/81

Int. Cl.³ A61K *31/55*; C07D *487/04, 513/14*

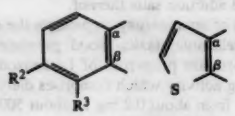
U.S. Cl. 424—273 R **11 Claims**

1. A compound of the formula



1

wherein A together with the two carbon atoms denoted as α and β is the group

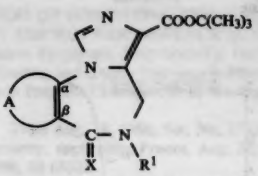


(a) or (b)

X is an oxygen or sulphur atom and R^1 is hydrogen or lower alkyl, and either R^2 is hydrogen, trifluoromethyl, halogen, cyano or nitro and R^3 is hydrogen or R^2 is hydrogen and R^3 is trifluoromethyl, halogen, cyano, nitro or lower alkyl,

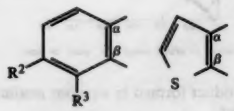
and pharmaceutically acceptable acid addition salts thereof.

10. A method of antagonizing, in a patient, the central-depressant, muscle relaxant, ataxic, blood pressure-lowering and respiratory-depressant properties of 1,4-benzodiazepines which have tranquillizing activity which comprises daily administering to said patient from about 0.2 mg to about 500 mg of a compound of the formula



1

wherein A together with the two carbon atoms denoted as α and β is the group



(a) or (b)

X is an oxygen or sulphur atom and R^1 is hydrogen or lower alkyl, and either R^2 is hydrogen, trifluoromethyl, halogen, cyano or nitro and R^3 is hydrogen or R^2 is hydrogen and R^3 is trifluoromethyl, halogen, cyano, nitro or lower alkyl,

or the pharmaceutically acceptable acid addition salts thereof.

4,352,818

DIAZEPINE DERIVATIVES AND THEIR USE

Walter Hunkeler, Magden, and Emilio Kyburz, Reinach, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

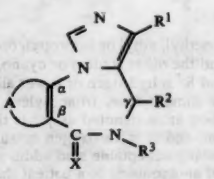
Filed Feb. 18, 1982, Ser. No. 349,879

Claims priority, application Switzerland, Feb. 27, 1981, 1341/81

Int. Cl.³ A61K *31/55*; C07D *487/04, 513/14*

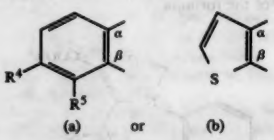
U.S. Cl. 424—273 R **12 Claims**

1. A compound of the formula



I

wherein A together with the two carbon atoms denoted as α and β is the group

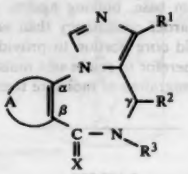


(a) or (b)

R^1 is hydrogen, lower alkyl, lower alkoxymethyl, halogen or nitro, R^4 is hydrogen, trifluoromethyl or halogen, R^5 is hydrogen, trifluoromethyl, halogen or lower alkyl and X is an oxygen or sulphur atom, and either R^2 is hydrogen and R^3 is lower alkyl or R^2 and R^3 together are trimethylene or propylene and the carbon atom denoted as γ has the (S)— or (R,S)— configuration,

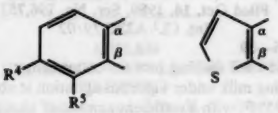
and pharmaceutically acceptable acid addition salts thereof.

11. A method of antagonising, in a patient, the central-depressant, muscle relaxant, ataxic, blood pressure-lowering and respiratory-depressant properties of 1,4-benzodiazepines which have tranquillizing activity which comprises the administration to said patient of from about 0.2 mg to about 500 mg daily of a compound of the formula



I

where A together with the two carbon atoms denoted as α and β is the group



(a) or (b)

R^1 is hydrogen, lower alkyl, lower alkoxymethyl, halogen or nitro, R^4 is hydrogen, trifluoromethyl or halogen, R^5 is hydrogen, trifluoromethyl, halogen or lower alkyl and X is an oxygen or sulphur atom and either R^2 is hydrogen and R^3 is lower alkyl or R^2 and R^3 together are trimethylene or propenylene and the carbon atom denoted as γ has the (S)— or (R,S)—configuration.

and the pharmaceutically acceptable acid addition salts thereof.

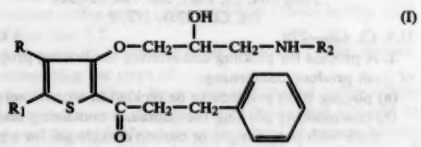
4,352,819

NOVEL 1-[3-(2-HYDROXY-3-ALKYLAMINOPROPOXY)-2-THIENYL]-3-PHENYL-1-PROPANONES AND THEIR SALTS AND A PROCESS FOR THE PREPARATION THEREOF

Dieter Binder, Vienna, Austria, assignor to Laevosan-Gesellschaft mbH & Co. KG, Linz, Austria

Filed Nov. 25, 1981, Ser. No. 324,760
Claims priority, application Austria, Nov. 28, 1980, 5818/80
Int. Cl.³ A61K *31/38*; C07D *333/16*
U.S. Cl. 424—275 8 Claims

1. A 1-[3-(2-hydroxy-3-alkylaminopropoxy)-2-thienyl]-3-phenyl-1-propanone of the formula



(I)

in which R and R_1 are independently hydrogen or methyl and R_2 is n-propyl, n-butyl, isobutyl or tert-butyl and an acid addition salt thereof.

4,352,820

METHOD FOR PROVIDING LONG-LASTING LOCAL ANESTHESIA AND COMPOUNDS AND COMPOSITIONS THEREFORE

James E. Scurlock, and Benson M. Curtis, both of Seattle, Wash., assignors to Virginia Mason Research Center, Seattle, Wash.

Filed Dec. 11, 1980, Ser. No. 215,223
Int. Cl.³ A61K *31/14*
U.S. Cl. 424—329 8 Claims

1. A method for providing a local anesthetic effect, said method comprising administering to a mammal a local anesthetic effect producing amount of an N,N,N-triethyl-N-alkyl ammonium salt wherein the alkyl group contains from about 8 to about 16 carbon atoms.

4,352,821

SWEET TABLETING AGENT

Mark A. Doran, Sunnyvale, and Thomas R. Rumolo, Fremont, both of Calif., assignors to Shaklee Corporation, Emeryville, Calif.

Filed Jul. 21, 1981, Ser. No. 285,639
Int. Cl.³ A61K *31/70, 9/16, 9/20*
U.S. Cl. 424—361 15 Claims

1. A composition consisting essentially of:

fructose and a substantially water insoluble carrier for the fructose, the fructose and the carrier together forming a compressible granule, the fructose being in a weight ratio with respect to the carrier of from about 0.1:1 to about 2.3:1, the carrier for the fructose being an edible, inorganic salt.

4,352,822

GUM BASE, CHEWING GUM CONTAINING SAME AND METHOD

Subraman R. Cherukuri; Dominick R. Friello, both of Danbury, Conn.; Michael Ferroti, Larchmont; Walter Jewell, Mamaroneck, and Ronald P. D'Amelia, Hicksville, all of N.Y., assignors to Nabisco Brands Inc., New York, N.Y.

Filed Dec. 15, 1980, Ser. No. 216,415
Int. Cl.³ A23G *3/30*
U.S. Cl. 426—4 25 Claims

1. A chewing gum base which has excellent shelf-life and remains soft over extended periods of time, comprising a polyisobutylene elastomer or a mixture of medium and lower molecular weight polyisobutylene elastomers having a molecular weight within the range of from about 750,000 to 1,300,000, and 37,000 to 80,000, respectively, said polyisobutylene elastomer being present in said base in an amount of at least about 4%, plasticizers comprising glyceryl triacetate and acetylated monoglyceride, one or more hydrophilic-type detackifiers which absorb saliva and become slippery, one or more filler-texturizing agents, one or more softening agents having a melting point above about 22° C., one or more emulsifiers which function as slip agents and impart hydrophilic properties to the elastomer, and an anti-tack combination comprising a polyterpene resin in an amount of from about 4 to about 25% by weight of said gum base, one or more waxes in an amount of from at least 2% to about 25% by weight of said gum base to enhance bite through characteristics, and optionally a polyethylene wax.

4,352,823

COEXTRUDED CHEWING GUM CONTAINING A SOFT NON-SBR GUM CORE PORTION

Subraman R. Cherukuri; Raymond L. Roy; Dominick R. Friello, all of Danbury, Conn., and Stephen H. Wolf, Rye, N.Y., assignors to Nabisco Brands, Inc., New York, N.Y.

Filed Apr. 13, 1981, Ser. No. 253,442
Int. Cl.³ A23G *3/30, 3/00*
U.S. Cl. 426—5 23 Claims

1. A coextruded chewing gum having a soft gum center

portion, comprising an extruded soft gum core portion formed of chewing gum containing at least about 5% up to about 10% by weight moisture based on the weight of the core portion and an outer shell portion formed of chewing gum having a harder consistency than said core portion, said soft core portion comprising a polyisobutylene elastomer or a mixture of medium and lower molecular weight polyisobutylene elastomers having a molecular weight within the range of from about 750,000 to 1,300,000 and 37,000 to 80,000, respectively, in an amount of from about 0.5% to about 25% by weight of said core portion gum base, plasticizers comprising glyceryl triacetate and acetylated monoglyceride in an amount of from about 0.5% to about 25% by weight of said core portion gum base, one or more hydrophilic-type detackifiers which absorb saliva and become slippery, one or more filler-texturizing agents, one or more softening agents having a melting point above about 22° C., one or more emulsifiers which function as slip agents and impart hydrophilic properties to the elastomer, and an anti-tack combination comprising a polyterpene resin, one or more waxes to enhance bite through characteristics, and optionally a polyethylene wax, said outer shell portion formed of chewing gum formulations generally known in the art and extruded simultaneously with said core portion so that said outer shell portion is bonded to said core portion to provide a support and protective barrier therefor to retain said moisture in said core portion and retard migration of moisture therefrom.

4,352,824

CHEWING GUM CONTAINING FATTY OR GELATINOUS SWEETENER AND METHOD

Wayne J. Puglia, Bellerose Village; Gary Kehoe, South Salem; Frank Witzel, Spring Valley; K. Warren Clark, Brewster, and Donald A. M. Mackay, Pleasantville, all of N.Y., assignors to Nabisco Brands, Inc., New York, N.Y.

Continuation of Ser. No. 134,401, Mar. 27, 1980, abandoned. This application Aug. 24, 1981, Ser. No. 295,334

Int. Cl.³ A23G *3/30*

U.S. Cl. 426—5 **8 Claims**

1. A laminated chewing gum having long-lasting sweetness and flavor, which comprises at least a first slab or layer of chewing gum including from about 13 to about 32% by weight of finished gum base consisting essentially of one or more natural gums, synthetic resins or mixtures thereof, ester gums, fillers and plasticizers, and a solid fatty or gelatinous flavor additive incorporated in and bonded with said finished gum base, said fatty or gelatinous flavor additive consisting essentially of marshmallow, caramel, butter, butter combined with sugar, chocolate, cocoa butter, lard, other fat protein, other animal fats, milk solids, coconut fat, vegetable fats, or confectioner's coatings, said fatty or gelatinous flavor additive being present in an amount of from about 40 to about 350% by weight of said gum base, or from about 8 to about 70% by weight of the chewing gum, said first slab or layer having the appearance and mouth feel of chewing gum as opposed to a candy, and providing a delayed but prolonged sweetness or flavor impact, and a second slab or layer of chewing gum combined with and bonded directly to said first slab or layer, said second slab or layer to provide initial sweetness or flavor impact.

4,352,825

COEXTRUDED CHEWING GUM CONTAINING A SOFT CORE PORTION

Subraman R. Cherukuri; Raymond L. Roy; Dominick R. Friello, all of Danbury, Conn., and Stephen H. Wolf, Rye, N.Y., assignors to Nabisco Brands, Inc., New York, N.Y.

Filed Feb. 23, 1981, Ser. No. 237,340

Int. Cl.³ A23G *3/30, 3/00*

U.S. Cl. 426—5 **25 Claims**

1. A coextruded chewing gum having a soft gum center portion, comprising an extruded soft gum core portion and an outer shell portion formed of chewing gum and extruded simultaneously with said core portion, said core portion formed of chewing gum containing more than about 5 up to about 10% by weight moisture based on the weight of the core portion and containing therein a preformed recrystallized sweetener combination including at least two sweeteners which have been recrystallized as a mixture, dispersed as said recrystallized mixture in said gum base, and one or more flavors dispersed in said gum base, said outer shell portion, which contains any of gum base, bulking agents, sweeteners, and flavors and has a harder consistency than said core portion, being bonded to said core portion to provide a support and protective barrier therefor to retain said moisture in said core portion and retard migration of moisture therefrom.

4,352,826

PROCESS FOR PREPARING ACID CHEESE CURD

Donald I. Pearline, Olivette; Edgar A. Corbin, Jr., Manchester, both of Mo., and Marvin A. Garr, Greenville, Ill., assignors to Mallinckrodt International Corp., St. Louis, Mo.

Filed Oct. 14, 1980, Ser. No. 196,752

Int. Cl.³ A23C *19/02*

U.S. Cl. 426—39 **10 Claims**

1. An acid curd making process comprising:

a. acidifying milk under vigorous agitation at about 32° F. to about 95° F. with a sufficient amount of an aqueous acidulent mixture of an acid salt and a free acid per 100 parts by weight of milk to obtain an acidified milk having a pH of from about 4.8 to about 5.5 without coagulation wherein about 10 to about 60 parts by weight of the acid salt and from about 5 to about 40 parts by weight of the free acid are present in the aqueous acidulent mixture; then

b. adjusting the acidified milk to a temperature of from about 75° F. to about 95° F.; then

c. maintaining the acidified milk at a temperature of from about 75° F. to about 95° F. and adding about 0.2 to about 0.8 parts by weight of an acidogen and from about 0.01 parts to about 0.05 parts by weight of proteolytic enzyme per 100 parts by weight of the acidified milk; and thereafter

d. allowing the acidified milk from (C) to remain quiescent at a temperature of from about 75° F. to about 95° F. for from about 30 minutes to about 4 hours to form an acid cheese curd suitable for making cottage cheese, baker's cheese, quark cheese, cream cheese and Neufchatel cheese.

4,352,827

ALTERED BRINING PROPERTIES OF PRODUCE BY A METHOD OF PRE-BRINING EXPOSURE OF THE FRESH PRODUCE TO OXYGEN OR CARBON DIOXIDE

Henry P. Fleming; David M. Pharr, and Roger L. Thompson, all of Raleigh, N.C., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Oct. 23, 1981, Ser. No. 314,323

Int. Cl.³ A23L *1/218*

U.S. Cl. 426—270 **5 Claims**

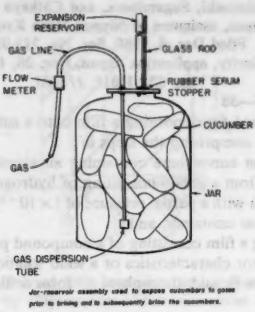
1. A process for pickling and altering the brining properties of fresh produce comprising:

(a) placing fresh produce to be pickled in a container;

(b) continuously purging the container containing said produce with pure oxygen or carbon dioxide gas for a period of time sufficient to remove air from the container and allow said oxygen or carbon dioxide to displace undissolved gases within the flesh of the produce;

(c) then, without allowing said produce to be exposed to the

air, filling the container with a brine solution until said produce is submerged;



(d) allowing the produce to stand in the brine solution for a period of time sufficient to result in a pickled produce.

4,352,828

CATION-EXCHANGE OF MILK AND PRODUCTS THEREOF

Jean P. Rialland, Retiers, and Jean P. Barbier, Noyal-sur-Seiche, both of France, assignors to Laiteries E. Bridel, Retiers, France

Filed Apr. 7, 1981, Ser. No. 251,892

Claims priority, application France, Apr. 17, 1980, 80 08644; Mar. 31, 1981, 81 06470

Int. Cl.³ A23C 9/146

U.S. Cl. 426—271 **32 Claims**

1. Milk processing method using a cation-exchanging resin in acid form for preparing an acidulated decationized milk, wherein said method comprises placing the milk, having a temperature of 0° C. to 4° C., in contact with the cation-exchanging resin in acid form for the time period necessary to lower the pH of the milk to a value below or equal to 3.8, and then separating decationized milk from the exchanging resin.

4,352,829

COFFEE EXTRACTION PROCESS

Robert M. Noyes, and Roger W. Voeller, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 5, 1981, Ser. No. 240,731

Int. Cl.³ A23F 5/22, 5/26

U.S. Cl. 426—387 **11 Claims**

1. A process for forming a coffee extract comprising:

(a) steaming roast and ground coffee at a pressure of from about 120 to about 170 psig for from about 5 to about 45 minutes;

(b) extracting the steamed coffee to form a coffee extract having a solids concentration of about 12% to about 25% and having a pH of less than 4.6.

(c) stripping the volatiles from the coffee extract; and

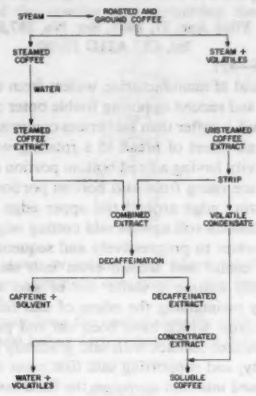
(d) combining the coffee extract from step (c) with unsteamed coffee extract, the combined extract having a pH of less than 4.7.

5. A process for producing a decaffeinated coffee concentrate comprising the steps of:

(a) forming an extract from roast and ground coffee which has been steamed at a pressure of from about 120 psig to about 170 psig for from about 5 to about 45 minutes having a pH of less than 4.6 and having a solids concentration of about 12% to about 25%;

(b) combining the extract from the steamed coffee with an extract from unsteamed coffee from which the volatiles have been removed, said combined extract having a pH of less than 4.7;

(c) decaffeinating the combined extracts;



(d) concentrating the decaffeinated coffee extract; and

(e) adding back the volatiles removed from the unsteamed coffee extract.

4,352,830

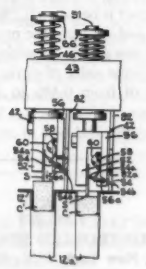
METHOD FOR EXTRACTING FROZEN CONFECTIONS

Ronald J. Billett, Sunnyvale, Calif.; David N. Anderson, and William M. Easter, both of Lakeland, Fla., assignors to FMC Corporation, Chicago, Ill.

Filed May 5, 1980, Ser. No. 146,814

Int. Cl.³ A23G 9/26

U.S. Cl. 426—421 **3 Claims**



1. An improved method of producing frozen stick confections generally including the steps of providing a mold member supporting a row of depending mold cups, depositing confection material into the mold cups, inserting sticks into the confection material so that the sticks project upwardly from the mold cups, freezing the confection material to form frozen confections within the mold cups, and gripping and pulling the sticks upwardly away from the mold cups at a pre-extraction area while simultaneously heating the mold cups to thaw the surface layers of the frozen confections to enable the frozen confections to be partially lifted from the mold cups, establishing a coating of frost on the surface of the confection while partially lifted, dropping the confections back into the mold cups, and conveying the mold cups to an extraction area where the confections are fully withdrawn from the mold cups.

4,352,831

METHOD FOR MANUFACTURING WAFERS

John F. Cavanagh, North Providence, and Paul A. Cavanagh, Johnston, both of R.I., assignors to Cavanagh & Sons, Smithfield, R.I.

Filed Apr. 27, 1981, Ser. No. 257,886
Int. Cl.[3] A21D 13/00
U.S. Cl. 426—497 5 Claims

1. A method of manufacturing wafers from a sheet of bread having first and second opposing friable outer crusts enclosing a center which is softer than said crusts comprising the steps of, advancing said sheet of bread to a rotating wafer former including a cavity having a fixed bottom portion and a gradually sloping surface rising from said bottom portion and terminating in a cutting edge around the upper edge of said cavity; rotating a pressure roll against said cutting edge of said rotating wafer former to progressively and sequentially press said first crusts, center and second crust into said cavity while simultaneously cutting a wafer out of said sheet of bread; continuously maintaining the edges of said first crust, center and second crust which have been cut and pressed into said cavity in constant contact with said gradually sloping surface of said cavity; and supporting said first crust which has been cut and pressed into said cavity on the fixed bottom portion of said cavity as said second crust is progressively cut.

4,352,832

STABILIZED DRESSING PRODUCTS

Robert W. Wood, West Milford, N.J.; John V. Parnell, Larchmont, and Andrew C. Hoefler, Warwick, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Continuation-in-part of Ser. No. 135,738, Mar. 31, 1980, abandoned. This application Jun. 29, 1981, Ser. No. 278,281
Int. Cl.[3] A23L 1/24
U.S. Cl. 426—589 8 Claims

1. A room-temperature, bacteriologically-stable dressing product having a moisture content of between 20% and 90% by weight and a pH of at least 4.2 wherein the acetic acid content of the product is between 0.2% and 4.0% by weight of the aqueous phase and wherein the product contains buffering salts selected from the group consisting of the soluble salts of acetic acid, the soluble salts of citric acid and combinations thereof at a level of from 0.4% to 3.0% by weight of the aqueous phase.

4,352,833

ADHERENT CONTROLLED RELEASE PESTICIDES

Robert W. Young, New York, N.Y.; Samuel Prussin, Carmel, Calif., and Norman G. Gaylord, New Providence, N.J., assignors to Young, Prussin, MGK, J.V., New York, N.Y.

Continuation of Ser. No. 102,638, Dec. 12, 1979, abandoned, which is a continuation of Ser. No. 858,603, Dec. 8, 1977, abandoned, which is a continuation of Ser. No. 696,271, Jun. 15, 1976, abandoned. This application Jun. 11, 1981, Ser. No. 272,788
Int. Cl.[3] A61K 31/695; A01N 17/08
U.S. Cl. 427—4 15 Claims

1. A composition consisting essentially of (a) a solid organopolysiloxane, soluble in organic solvents, and containing hydroxyl groups, wherein the number of hydroxyl radicals ranges from 1 radical per polysiloxane molecule up to 30 weight percent of the total organopolysiloxane molecular weight, and (b) an insecticide, the amount of insecticide being from about 1 part by weight to 0.5 to 1,000 parts by weight of solid polysiloxane.

4,352,834

METHOD FOR FABRICATING A SEMICONDUCTOR DEVICE

Kazuhisa Taketoshi, Sagamihara, and Chihaya Ogusu, Tokyo, both of Japan, assignors to Nippon Hoso Kyokai, Japan

Filed Dec. 4, 1980, Ser. No. 213,016
Claims priority, application Japan, Dec. 26, 1979, 54-168076
Int. Cl.[3] H01L 21/363
U.S. Cl. 427—38 16 Claims

1. A method for depositing a film onto a substrate utilizing evaporation comprising the steps of

forming an atmosphere containing an atomic state gas selected from a group consisting of hydrogen, oxygen and nitrogen with a partial pressure of 1×10^{-3} Torr or less, in a vacuum container, and

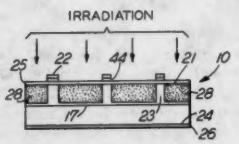
depositing a film consisting of a compound presenting semiconductor characteristics or a solid solution thereof on a substrate in said atmosphere to form a film on said substrate.

4,352,835

MASKING PORTIONS OF A SUBSTRATE

Walter R. Holbrook, Reading, and William A. Sponsler, West Lawn, both of Pa., assignors to Western Electric Co., Inc., Allentown, Pa. and Bell Telephone Laboratories, Inc., New York, N.Y.

Filed Jul. 1, 1981, Ser. No. 279,290
Int. Cl.[3] B05D 3/06
U.S. Cl. 427—38 10 Claims



1. A method of removably masking at least one portion of a substrate to protect said portion during irradiation of said substrate, comprising:

applying over said portion, a parting layer of metal selected from the group consisting of nickel, aluminum, indium and tin, said layer being removable from the substrate by application of a detaching agent which is harmless to the substrate; and

applying over said parting layer, a masking layer of material, said material being adherent and harmless to the parting layer and being substantially impenetrable by the radiation.

4,352,836

METHOD FOR OBTAINING AN ABRASIVE COATING

John W. Robinson, Levittown, Pa., and Grzegorz Kaganowicz, Princeton, N.J., assignors to RCA Corporation, New York, N.Y.

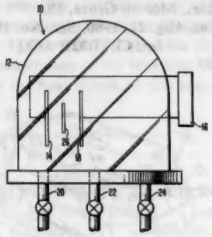
Filed Apr. 20, 1981, Ser. No. 255,399
Int. Cl.[3] B05D 5/02; E05D 15/10
U.S. Cl. 427—39 10 Claims

1. A method for preparing a silicon oxide (SiO_x) abrasive coating, wherein $1 \leq x \leq 2$, on a substrate comprising the steps of:

subjecting N_2O and SiH_4 to a glow discharge;

depositing a first SiO_x layer having a refractive index as

measured by ellipsometry of between about 1.0 and 1.2 onto the substrate; and



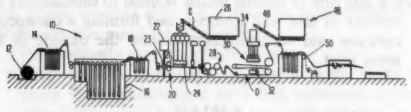
depositing a second SiO_x layer having a refractive index as measured by ellipsometry of between about 1.30 and 1.48 onto the first SiO_x layer.

4,352,837

METHOD OF MANUFACTURING ROOFING SHINGLES HAVING MULTIPLE PLY APPEARANCE

Robert L. Kopenhaver, Berwyn, Pa., assignor to Certain-teed Corporation, Valley Forge, Pa.

Division of Ser. No. 808,171, Jun. 20, 1977, Pat. No. 4,295,445.
This application May 22, 1981, Ser. No. 266,509
Int. Cl.³ B05C *19/00*
U.S. Cl. 427—187 4 Claims



1. An improved method for manufacturing roofing shingles from dry roofing material comprising, the steps of, continuously feeding dry roofing material, saturating the dry roofing material with asphalt, automatically applying a first uniform, longitudinal adhesive coating to the previously saturated material, automatically applying a first continuous coating of granules to said adhesive coating, and cutting said material into shingles of a given length and a given width, wherein the improvement comprises, after the applying of the first coating of granules and prior to cutting said material into shingles, the step of automatically and periodically applying a repeated series of spaced apart bands of adhesive upon the first coating of granules, with the series of bands of adhesive material having various widths and being periodically applied at a predetermined periodicity such that the series of bands are applied to the first coating of granules over a length different than the given length of the shingle, whereby varying portions of said series of bands will be present on each of said given lengths of shingles, and automatically distributing granules in conjunction with the applying of the bands of adhesive such that granules are only distributed upon said bands of adhesive.

4,352,838

DIPLESS METALLIZING PROCESS

Theodore Bostroem, 470 Park Rd. Ext., Middlebury, Conn. 06762

Filed Apr. 30, 1980, Ser. No. 145,302
The portion of the term of this patent subsequent to Mar. 2, 1993, has been disclaimed.
Int. Cl.³ B05D *1/00*
U.S. Cl. 427—209 19 Claims

1. A process for coating a moving metallic article with a metallic coating, comprising the steps of:

(a) Subjecting said metallic article to a continuous stream of the molten coating material for a very short period of time, coating all surfaces of the article;

(b) removing excess coating metal from the coated metallic article by subjecting it to the action of a hot gas blast, the rapidity of the coating step permitting the hot gas to

comprise steam or other gases which would otherwise oxidize any aluminum contained in the molten coating metal, and

(c) rapidly quenching the coated metallic strip after the hot gas blast and before further handling of the coated strip.

4,352,839

METHOD OF FORMING A LAYER OF POLYMETHYL METHACRYLATE ON A SURFACE OF SILICON DIOXIDE

Daniel R. Olson; Bruce F. Griffing, both of Schenectady, and James F. Norton, Alplaus, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 26, 1981, Ser. No. 267,101
Int. Cl.³ B05D *3/12*
U.S. Cl. 427—240 9 Claims

1. A method of forming a layer of polymethyl methacrylate on a surface of silicon dioxide of a substrate comprising:

treating said surface of silicon dioxide with a solution of carboxylic acid and thereafter drying said surface,

depositing a solution of polymethyl methacrylate on the treated surface of silicon dioxide,

spinning said substrate with said solution of polymethyl methacrylate on said surface of silicon dioxide at a speed and for a time to spread said solution over said surface and to remove the solvent of said solution of polymethyl methacrylate thereby forming said layer of polymethyl methacrylate on said surface of silicon dioxide,

heating said layer of polymethyl methyacrylate on said surface of silicon dioxide at a temperature and for a time to remove residue of the solvent of said solution of polymethyl methacrylate in said layer of polymethyl methacrylate.

4,352,840

INTERDISPERSED PHASE COATINGS METHOD

G. Kelly Sievers, Burbank, Calif., assignor to Turbine Metal Technology, Inc., Burbank, Calif.

Filed Nov. 17, 1980, Ser. No. 207,246
Int. Cl.³ C23C *11/00, 13/00*
U.S. Cl. 427—252 13 Claims

1. In the method of forming diffusion coatings for improved corrosion, erosion or wear properties in high performance alloy structures, said coatings being characterized by the intimate presence of an interdispersed phase material in desired amount to enhance one or more of said properties, which includes interdiffusing under non-oxidizing conditions a portion of the structure surface and an alloying element disposed therewith in a diffusion pack of predetermined composition desirable for said interdiffusion, the improvement comprising maintaining said desired amount of interdispersed phase material relatively richly concentrated within a selected pack zone corresponding to the locus of interdiffusion for intimate diffusion coating interdispersal from said pack zone into said coating in interdiffusion reponsive relation, and maintaining said

phase material as discrete particulate matter during said interdispersal.

4,352,841

SURFACE PRE-TREATMENT PRIOR TO UNDERWATER BONDING

Malcolm R. Bowditch, Broadstone, England, assignor to The Secretary of State for Energy in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Jul. 17, 1981, Ser. No. 284,318

Claims priority, application United Kingdom, Jul. 30, 1980, 8024896

Int. Cl.³ B05D *3/00, 3/12*

U.S. Cl. 427—292 **10 Claims**

1. A method of bonding an adherent resin to a metal surface having an adsorbed water contaminant including the steps of

a. cleaning the metal surface

b. removing the contaminant from said surface by coating the cleaned metal surface with a pretreatment material comprising an organic solvent and a surfactant, which pretreatment material is

i. adapted to displace the absorbed contaminant from the metal surface

ii. substantially chemically inert with respect to the metal

iii. soluble in the resin, and

iv. displaceable from the metal surface by the resin, and

c. with said surface still coated with said pretreatment material, applying the adherent resin to the coated metal surface to cause the resin to remove said pretreatment material from said metal surface by solution of the pretreatment material into the resin while said resin bonds to said metal surface.

4,352,842

PROCESS FOR COATING AND CURING THERMOSETTING RESINOUS BINDER COMPOSITIONS USING TRANSESTERIFICATION CATALYST

Petrus G. Kooymans; Johannes J. M. H. Wintraecken; Werner T. Raudenbusch; Josepha M. E. Seelen-Kruijssen, and Gerardus C. M. Schreurs, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 99,363, Dec. 3, 1979, Pat. No. 4,332,711. This application Feb. 16, 1982, Ser. No. 349,295

Claims priority, application Netherlands, Dec. 11, 1978, 7812028

Int. Cl.³ B05D *3/02*

U.S. Cl. 427—385.5 **9 Claims**

1. A process for preparing an insoluble, infusible coating on a surface which comprises (A) applying a thermosetting binder composition comprising:

(I) a mixture or precondensate of:

(1) a non-acidic resinous compound essentially free of ethylenically unsaturation, having a molecular weight of at least 900 and a hydroxyl content of at least 0.2 equivalent per 100 g, and

(2) a non-acidic polyester having an acid number of not more than 10 of a polycarboxylic acid cross-linking agent having more than one β-hydroxyl ester group per molecule, at least one of components (1) and (2) having a hydroxyl functionality of more than 2, and

(II) a transesterification-promoting metal salt or metal complex curing catalyst which is soluble in liquid hydrocarbons and

(B) curing said coating at a temperature not higher than 200° C.

4,352,843

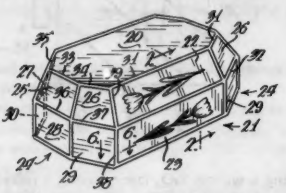
COMPONENT FOR A MULTIPLANAR DEVICE

Ronald P. Eckert, Northbrook, Ill., assignor to Thomas A. Schutz Co., Inc., Morton Grove, Ill.

Filed Aug. 21, 1980, Ser. No. 180,097

Int. Cl.³ B32B *3/00*

U.S. Cl. 428—33 **4 Claims**



1. A component for a multiplanar device having effectively planar, angularly related, rigid molded plastic walls, said component comprising:

first and second effectively planar polygonal wall members of substantially rigid molded plastic which have major areas of substantially uniform thickness, said wall members having strips along their adjacent side portions which are substantially thicker than said major areas and the adjacent sides of said wall members forming a miter joint which positions said wall members at a predetermined angle to one another, said adjacent sides being bonded together;

and a thin film of flexible plastic bonded to substantially the entirely of said wall members and forming a connection between said wall members around the outside of the miter joint.

4,352,844

THERMOPLASTIC FILM HAVING IMPROVED HANDLING AND SEALING CHARACTERISTICS AND RECEPTACLE FORMED THEREFROM

Norman D. Bornstein, Spartanburg, S.C., assignor to W. R. Grace & Co., Duncan, S.C.

Filed May 29, 1981, Ser. No. 268,207

Int. Cl.³ B65D *65/40, 75/06, 75/12, 85/50*

U.S. Cl. 428—35 **12 Claims**

1. A multi-layer, heat shrinkable, thermoplastic packaging film which will produce heat seals having improved seal strength and grease resistance at shrink temperatures comprising:

(a) at least three layers, the first layer being a surface layer and the second layer being adjacent thereto;

(b) said first and second layers comprising ethylene-vinyl acetate copolymers, the copolymer of the first layer having a higher melting temperature than the copolymer of the second layer;

(c) said second layer being at least 1½ times the thickness of the first layer; whereby the shrink temperature of the entire multi-layer film is controlled by the shrink temperature of the second layer;

(d) the copolymers in both first and second layers being cross linked: and,

(e) at least one additional or third polymeric layer adjacent the second layer, the material of said additional layer comprising a copolymer selected from the group consisting of vinylidene chloride copolymers and hyrolyzed ethylene-acetate copolymers.

10. A method of improving the handling and heat sealing characteristics at shrink temperatures of a heat shrinkable film having a surface or second layer comprising an ethylene-vinyl acetate copolymer, said method comprising the steps of:

(a) providing an ethylene-vinyl acetate copolymer for a first layer, the copolymer for the first layer having a higher

melting temperature than the copolymer of the second layer; and,

(b) forming a joining said first layer to a surface of said second layer whereby said first layer becomes a surface layer for the resulting multi-layer film, said second layer being at least 1½ times thicker than the first, whereby the heat shrink temperature of the resulting multi-layer film is controlled by the heat shrink temperature of said second layer.

4,352,845

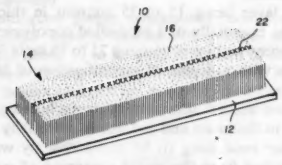
PILE WEATHER STRIP WITH BARRIER FIBERS AND BODY FIBERS

Stanley R. Miska, Henrietta, N.Y., assignor to Schlegel Corporation, Rochester, N.Y.

Continuation of Ser. No. 191,927, Sep. 29, 1980, abandoned. This application Oct. 2, 1981, Ser. No. 307,887

Int. Cl.³ D04H *11/00*

U.S. Cl. 428—88 **8 Claims**



1. A pile weather strip for sealing the space between relatively movable members, comprising:

a longitudinally extending backing strip;

a longitudinally extending first row of body fibers, each body fiber characterized by a first maximum cross-sectional dimension and having one end attached to said backing strip and its opposite free end projecting from said backing strip; and

a second longitudinally extending row of substantially identical nestable monofilament barrier fibers adjacent said first row of body fibers, each monofilament barrier fiber having a non-circular cross-sectional shape characterized by at least one cross-sectional dimension greater than the maximum cross-sectional dimension of said body fibers and generally longitudinally aligned along said backing strip and having one end of said barrier fiber attached to said backing strip and its opposite free end projecting from said backing strip said row of barrier fibers operative to substantially reduce the infiltration of air and moisture thereacross.

4,352,846

CLEANING CLOTH

Michael Pässler, Neusäss; Bohuslav Tecl, Weinheim, and Rolf Schumacher, Hirschberg, all of Fed. Rep. of Germany, assignors to Carl Freudenberg, Firma, Weinheim an der Bergstrasse, Fed. Rep. of Germany

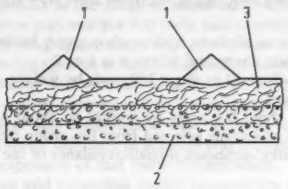
Filed Jan. 26, 1981, Ser. No. 228,488

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1980, 8004287[U]

Int. Cl.³ A47L *13/16*; B32B *25/02*

U.S. Cl. 428—105 **7 Claims**

1. A cleaning cloth for household and industrial use comprising a soft resilient needled nonwoven fabric having a plurality of rubber strips surmounting its top surface in the manner of relief, the height of the rubber strips being about 0.2 to 0.4 times their width but not more than about 0.5 times the thickness of the nonwoven fabric, the nonwoven fabric on its underside carrying a continuous layer of an open-pore latex foam which projects above the bottom surface and penetrates into



the nonwoven fabric to the extent of about 10 to 40 percent of the thickness of the nonwoven fabric.

4,352,847

TRANSFER FILM FOR USE IN ELECTROPHOTOGRAPHIC COPIERS

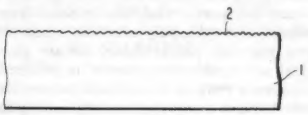
Toshiaki Okiyama, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 14, 1980, Ser. No. 140,400

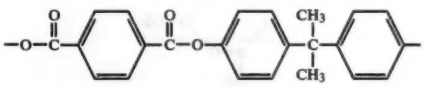
Claims priority, application Japan, Apr. 13, 1979, 54/44208

Int. Cl.³ B32B *3/26*

U.S. Cl. 428—141 **11 Claims**



1. A transfer film for use in electrophotographic copiers comprising a matted plastic film having a UL temperature index of at least 120° C. and at least one side of which has a surface roughness of at least 1.0 micron, said plastic film comprising a resin selected from the group consisting of a polysulfone resin, a polyarylate resin having repeated units represented by the formula



and a chlorinated polycarbonate resin, said transfer film having an opacity of from 20 to 65%.

4,352,848

TRANSPARENCIES PRODUCED FROM EPOXY RESINS CURED WITH ADDUCTS OF TRIMETHOXYBOROXINE AND BENZYL ALCOHOL AND INTERLAYERS OF MERCAPTAN RESINS

John R. Uram, Jr., Glendale, Ariz., assignor to Goodyear Aerospace Corporation, Akron, Ohio

Continuation-in-part of Ser. No. 70,390, Aug. 28, 1979, Pat. No. 4,294,886. This application Nov. 6, 1980, Ser. No. 204,424

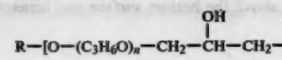
Int. Cl.³ B32B *27/38*

U.S. Cl. 428—192 **15 Claims**

1. A laminate resistant to moisture permeation; comprising:

a blend having,

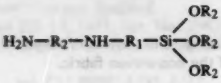
(a) about 100 parts by weight of a mercaptan compound having the following formula:



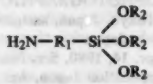
where R is an aliphatic hydrocarbon group having from 1 to 18 carbon atoms and where n is 1 or 2;

(b) from about 40 to about 250 parts by weight of an epoxy resin; and

(c) from about 0.5 parts by weight to about 4.0 parts by weight of a silane selected from the group consisting of: N-aminoalkyl-aminoalkyl-trialkoxysilanes of the formula:



wherein R_1 is an alkylene having 1–6 carbon atoms and R_2 is an alkyl, having 1–6 carbon atoms, and aminoalkyl-trialkoxysilanes of the formula:

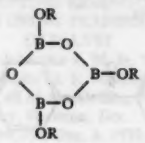


wherein R_1 and R_2 are as defined above, and combinations thereof,

said blend being transparent and is contiguously sandwiched between transparent materials selected from the group consisting of acrylic, polycarbonate, a heat resistant transparent material, polyurethane, silicate glass, polyvinyl butyral, and combinations thereof, to produce a composite transparency resistant to moisture permeation;

said heat resistant transparent material having from about 80 parts to about 100 parts by weight of an epoxy resin, from 5 parts to about 30 parts by weight of a boroxine, and from about 1 part to about 10 parts by weight of a phenyl substituted alkyl alcohol, said alkyl alcohol having from 1 to 20 carbon atoms;

said boroxine having the formula:



where R is a compound having from 1 to 18 carbon atoms; and

wherein said silane is selected from the group consisting of gamma aminopropyl triethoxy silane, normal beta aminoethyl gamma aminopropyl trimethoxy silane, and combinations thereof.

4,352,849

COEXTRUDED, HEAT-SHRINKABLE, MULTI-LAYER, POLYOLEFIN PACKAGING FILM

Walter B. Mueller, Taylors, S.C., assignor to W. R. Grace & Co., Duncan, S.C.

Filed Mar. 26, 1981, Ser. No. 247,955

Int. Cl.³ B32B *7/02*

U.S. Cl. 428—213 **8 Claims**

1. A multilayer, heat shrinkable packaging film comprising:

(a) a core layer consisting essentially of from 5% to 50% by weight of an ethylene-propylene copolymer blended with 95% to 50% by weight of an ethylene-vinyl acetate copolymer wherein the vinyl acetate content of the ethylene-vinyl acetate copolymer is in the range of 4% to 18%; and

(b) skin or surface layers comprising an ethylene-propylene copolymer, wherein the ethylene content of the ethylene-propylene copolymer in the core blend and the surface layer is in the range of 1% to 6% by weight.

4,352,850

FIVE-LAYERED PACKAGING FILM

Masataka Yamamoto; Tsutomu Uehara, and Minoru Yoshimori, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 5, 1981, Ser. No. 240,792

Claims priority, application Japan, Mar. 19, 1980, 55-36077[U]

Int. Cl.³ B32B *7/02*

U.S. Cl. 428—214 **5 Claims**

1. A five-layered packaging film for packaging soft foodstuffs comprising:

(a) an outer layer, (b) a first adhesive layer, (c) a core layer, (d) a second adhesive layer and (e) an inner layer in order of lamination;

said outer layer being 15 to 35 microns in thickness and consisting essentially of a saponified copolymer of ethylene and vinyl acetate containing 25 to 75 mole % of ethylene units with a degree of saponification of higher than 90%,

said first and second adhesive layers each being 0.1 to 10 microns in thickness and consisting essentially of a graft copolymer containing (i) 95 to 99.99% by weight of a resin selected from the group consisting of polymers of alpha-olefines, copolymers of alpha-olefines and vinyl acetate and saponified copolymers thereof, and (ii) 0.01 to 5% by weight of unsaturated carboxylic acid units or anhydride units thereof,

said core layer being 35 to 55 microns in thickness and consisting essentially of a polymer selected from the group consisting of (i) copolymers of ethylene and vinyl acetate containing 85 to 95% by weight of ethylene units, (ii) polyethylenes and (iii) polypropylenes,

said inner layer being 50 to 80 microns in thickness and consisting essentially of an ionomer containing sodium or zinc as a metallic component and a copolymer of an alpha-olefine and acrylic acid or methacrylic acid; and

the total thickness of said five-layered packaging film being 100 to 180 microns and the specific elasticity of said five-layered packaging film being 2 to 6 kg/cm of the width of said five-layered packaging film at an elongation at 2.5% and a temperature of 50° to 150° C.

4,352,851

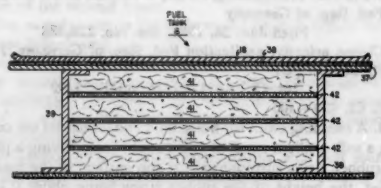
VOID FILLER FOAM FIRE SUPPRESSION SYSTEM

Roger M. Heitz, Palos Verdes Estates, and Franklin Hill, Van Nuys, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 16, 1980, Ser. No. 217,282

Int. Cl.³ B32B *3/26*

U.S. Cl. 428—250 **10 Claims**



1. Aircraft armor comprising:

a planiform sheet metal member having first and second sides;
a layer of polysulfide impregnated fabric on said first side planiform sheet metal member;
a plurality of lateral support members attached to said second side of said sheet metal member providing stiffening therefor and defining an armor volumes therebetween;
at least one layer of reticulated foam within said volume extending between said lateral support member; and
a layer of polysulfide impregnated ballistic cloth across said plurality of lateral support members and contiguous with said at least one layer to form a cover for said armor.

4,352,852

REINFORCED PLASTIC MATRIX OF THERMOSETTING RESIN EMBEDDED WITH ACRYLONITRILE POLYMER FIBER

Francesco DeMaria, Gulf Breeze and Relmond H. Hamilton, Pensacola, both of Fla., assignors to American Cyanamid Company, Stamford, Conn.

Filed May 19, 1980, Ser. No. 151,021
Int. Cl.³ B32B *27/00*; D04B *1/00*; D01F *6/18*
U.S. Cl. 428—290 4 Claims

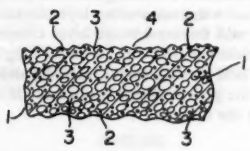
1. A reinforced plastic composition comprising a plastic matrix derived from a thermosetting resin and embedded therein from about 10 to 90 weight percent of an acrylonitrile polymer fiber having a straight tenacity of at least about 5.0 grams per denier, said percent being based on the weight of the reinforced plastic composition.

4,352,853

SOUND ABSORBER

Fusaoki Uchikawa, Kamakura; Hideharu Tanaka; Mutsuo Sekiya, both of Amagasaki, and Yasufumi Ohata, Tokyo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 9, 1981, Ser. No. 300,552
Claims priority, application Japan, Mar. 17, 1981, 56-41387; Mar. 17, 1981, 56-41389; Mar. 17, 1981, 56-41390; Mar. 24, 1981, 56-43456
Int. Cl.³ B32B *5/16*
U.S. Cl. 428—304.4 14 Claims



1. A sound absorber which comprises a layer of a composition of a heat resistant binder and an acidic solid catalyst which is coated on a porous metal substrate in the hardened form.

4,352,854

MOLDED SPONGE-LIKE THERMOPLASTIC ELASTOMER ARTICLES HAVING THIN, DENSE SKINS AND A PROCESS FOR THEIR PRODUCTION

Roy W. Siedenstrang, and Agmund K. Thorsrud, both of Stow, Ohio, assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 134,829, Mar. 28, 1980, abandoned. This application Feb. 20, 1981, Ser. No. 236,344
Int. Cl.³ B32B *5/20, 25/14*; B29D *27/00*
U.S. Cl. 428—318.8 8 Claims

1. A method for producing molded sponge like articles comprising:
(a) introducing into a mold an expandable thermoplastic elastomer composition comprising:
(1) vinyl-substituted aromatic compounds containing from 8–18 carbon atoms copolymerized with conjugated diene having from 4–12 carbon atoms,
(2) resinous solid polymer of vinyl-substituted aromatic compound in the range of about 10 to about 60 parts resinous polymer per 100 parts said copolymer,
(3) polarizing agent, and
(4) blowing agent in an amount sufficient to produce upon activation and molding an article of rubbery, sponge-like porosity surrounded by a thin, dense skin,
(b) melting said composition with microwave energy at temperatures sufficient to activate said blowing agent and cause expansion of said melted composition,
(c) shaping said expanding melted composition at low pressures to form said sponge like molded article having a thin, dense skin; and
(d) removing said molded article from the mold.
7. An article molded by the method of claim 1.

4,352,855

TRANSFER-ONTO-PLAIN PAPER TYPE PRESSURE-SENSITIVE COPYING PAPER

Shigetoshi Hiraishi, Tokyo; Sadao Morishita, Ushikumachi, and Toshihiko Matsushita, Funabashi, all of Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Feb. 26, 1981, Ser. No. 238,656
Claims priority, application Japan, Mar. 3, 1980, 55-26390
Int. Cl.³ B41M *5/16*
U.S. Cl. 428—320.4 12 Claims

1. A transfer-onto-plain paper type pressure-sensitive copy sheet produced by single coating in monolayer to one surface of a support, a colorless electron-donating color former, a colorless electron-attracting color developer which reacts with said color former to give a colored product, and a wax mixture comprising (1) an amide wax selected from the group consisting of saturated fatty acid amides having 14 or less carbon atoms and unsaturated fatty acid amides having one or more unsaturated bonds present in an amount which is effective to prevent premature coloration and (2) other wax.

4,352,856

SHAPED RIGID ARTICLES CONTAINING FLY ASH AND RESIN

John G. Smillie, Aurora, Ill., assignor to Aurora Industries, Inc., Montgomery, Ill.

Filed Apr. 23, 1979, Ser. No. 32,270
Int. Cl.³ B32B *5/16, 27/00*; C08G *51/04*
U.S. Cl. 428—329 11 Claims

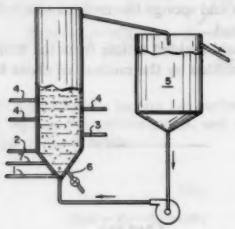
1. A method of manufacturing shaped rigid articles, said method comprising the steps of
preparing a mixture of thermally stable particulate material and a liquid resin having a viscosity of less than about 10 Stokes to form a thin coating of resin on said particles, at least a major portion of said particulate material comprising hollow fly ash spheres, and
forming the resulting mixture into a preselected shape with said resin bonding said particles together to form a rigid article of said preselected shape containing less than about 15% by weight resin and in which a major portion of said particulate material still comprises hollow fly ash spheres.

4,352,857

SPHERICAL CRYSTALLINE SODIUM URANATE AND PROCESS OF PRODUCING SAME BY ADJUSTING THE URANIUM CONTAINING SOLUTION IN CRYSTALLIZER

Jacques Dugua, Vernaison, France, assignor to PCUK Produits Chimiques Ugine Kuhlmann, Courbevoie, France

Filed Dec. 7, 1979, Ser. No. 101,235
Claims priority, application France, Dec. 8, 1978, 78 34581
Int. Cl.³ B32B *15/02*
U.S. Cl. 428—402 3 Claims



2. In a process for producing sodium uranate crystals which comprises introducing an uranium containing solution containing about 1 to 40 g/l of uranium and sodium hydroxide into a crystallizer to produce a supersaturated solution of sodium uranate and maintaining the uranium containing solution in the state of a fluidized bed by a continuous ascending flow of a supersaturated solution of the same sodium urante, the improvement which comprises adding to the uranium containing solution being introduced into the crystallizer, before it is introduced into the crystallizer mother liquors of crystallization of sodium uranate, in a sufficient amount to adjust the uranium content to between about 0.5 and 5.18 g/l within a period of less than about 2 seconds.

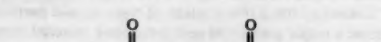
4,352,858

POLYURETHANE ADHESIVE COMPOSITIONS MODIFIED WITH A DICARBAMATE ESTER USEFUL IN LAMINATING SUBSTRATES

Henry Stanley, Cedar Grove, N.J., assignor to National Starch and Chemical Corp., Bridgewater, N.J.

Filed Sep. 4, 1981, Ser. No. 299,352
Int. Cl.³ C08G *18/79*; C09J *3/02*; B32B *27/40*
U.S. Cl. 428—423.1 9 Claims

1. An improved modified polyurethane adhesive composition comprising an isocyanate-terminated prepolymer having a molecular weight of at least about 1000, and 2.5–100% by weight, based on said prepolymer, of a dicarbamate ester reaction product of two moles of an organic diisocyanate and one mole of a dihydroxy compound, of the general formula:



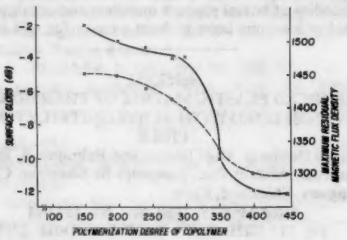
wherein R is a divalent hydrocarbon radical and R^1 is a divalent aliphatic radical, and said dicarbamate esters is compatible with said prepolymer and has a molecular weight no greater than 800.

4,352,859

MAGNETIC RECORDING MEDIUM

Kuniichi Yoda; Takehisa Ohkawa, and Hitoshi Azegami, all of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Jul. 20, 1981, Ser. No. 285,288
Claims priority, application Japan, Jul. 31, 1980, 55-104392
Int. Cl.³ B32B *27/30*
U.S. Cl. 428—425.9 6 Claims



1. A magnetic recording medium which comprises a substrate coated with a magnetic layer comprising a magnetic powder and a binder comprising an urethane resin or a polyester and a vinyl chloride type copolymer of vinyl chloride-vinyl acetate-vinyl alcohol copolymer, vinyl chloride-vinyl acetate-maleic acid copolymer or vinyl chloride-vinylidene chloride copolymer having a polymerization degree of less than 300.

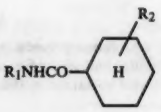
4,352,860

THERMOSENSITIVE RECORDING MATERIAL

Keishi Kubo, and Elichi Kawamura, both of Numazu, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed May 7, 1981, Ser. No. 261,558
Claims priority, application Japan, May 13, 1980, 55-62312; Jun. 19, 1980, 55-82167
Int. Cl.³ B41M *5/18*
U.S. Cl. 428—478.2 25 Claims

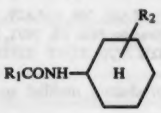
1. A thermosensitive recording material comprising a support member and a thermosensitive layer formed on said support member, said thermosensitive layer comprising a leuco dye and an acidic material capable of forming a color upon application of heat thereto, and at least one amide compound selected from the group consisting of an amide compound (1) represented by the formula (1)



(1)

wherein R_1 represents an alkyl group with 1 to 30 carbon atoms, a phenyl group or a substituted phenyl group; and R_2 represents hydrogen or an alkyl group with 1 to 4 carbon atoms;

an amide compound (2) represented by the formula (2)

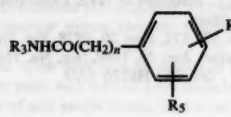


(2)

wherein R_1 represents an alkyl group with 1 to 30 carbon atoms, a phenyl group or a substituted phenyl group, and

R_2 represents hydrogen or an alkyl group with 1 to 4 carbon atoms; and

an amide compound (3) represented by the formula (3)



(3)

wherein R_3 represents an alkyl group with 1 to 30 carbon atoms; R_4 and R_5 individually represent hydrogen, a halogen atom, an alkyl group with 1 to 4 carbon atoms or an alkoxy group with 1 to 4 carbon atoms; and n is an integer, 0 or 1.

4,352,861

PHOTOGRAPHIC PAPER BASE WITH IMPROVED DURABILITY

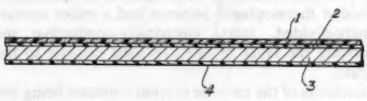
Walter von Meer, Bad Iburg; Uwe Jensen, Osnabruck, and Reiner Anthonsen, Bramsche, all of Fed. Rep. of Germany, assignors to Felix Schoeller, Jr. GmbH & Co. KG, Osnabruck, Fed. Rep. of Germany

Filed Oct. 8, 1980, Ser. No. 195,252

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1979, 2940870

Int. Cl.³ B32B *23/08*

U.S. Cl. 428—511 **6 Claims**



1. A photographic paper base comprising a base paper and first and second resin layers arranged one on top of the other on at least one side of said said base paper, said first resin layer lying on the paper and said second resin layer lying on the first layer and having a surface which is adapted to contact and receive a photographic layer, wherein said second layer includes a polyolefin and only said second layer at the time of application to said first layer contains at least one of stabilizer and antioxidant compositions for stabilization of said resins against degradation from oxidation or light.

4,352,862

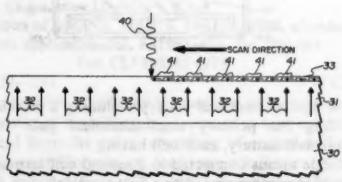
THERMALLY STABLE MAGNETIC FILM WHICH RESISTS HARD BUBBLES

Michael H. Nemiroff, Del Mar, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Nov. 10, 1980, Ser. No. 205,100

Int. Cl.³ H01F *1/00*; B05D *3/06*

U.S. Cl. 428—694 **13 Claims**



1. A crystalline magnetic film which resists hard bubbles from forming in it; said film having oppositely facing top and bottom surfaces with said bottom surface being disposed on a substrate; said film containing at least two rare-earth elements symmetrically disposed at lattice sites in the film's interior and bottom surface to there produce a magnetic moment perpendicular to the film's surfaces; wherein the chemical composition at said film's interior and said film's surfaces is the same, and said rare-earth elements are less symmetrically disposed at the lattice sites in a region at said film's top surface than at said film's interior and bottom surface, to there produce a magnetic moment parallel to said top surface.

4,352,863

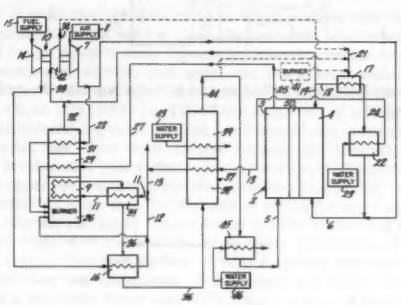
APPARATUS AND METHOD FOR PRODUCING HIGH PRESSURE STEAM IN A FUEL CELL SYSTEM

Hansraj C. Maru, Brookfield Center, Conn., assignor to Energy Research Corporation, Danbury, Conn.

Filed Jan. 21, 1981, Ser. No. 226,901

Int. Cl.³ H01M *8/06*

U.S. Cl. 429—17 **26 Claims**



1. A fuel cell system comprising:

a fuel cell including a cathode section for receiving oxidant process gas and an anode section for receiving fuel process gas;

and means responsive to exhausted process gas and to gas at a higher temperature for producing steam, said steam producing means including:

heat exchanger means for receiving said exhausted process gas and said higher temperature gas in heat exchange relationship to increase the temperature of said exhausted process gas to a point where said exhausted process gas can be placed in heat exchange relationship with water to produce steam.

4,352,864

METAL/ACID ION PERMEABLE MEMBRANE FUEL CELL

Ralph C. Struthers, Saugus, Calif., assignor to Universal Fuel Systems, Inc., Saugus, Calif.

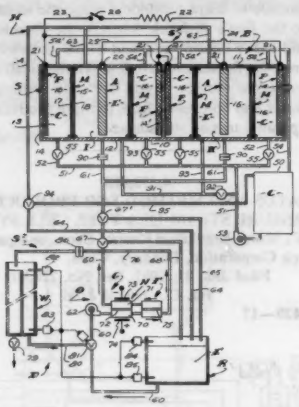
Filed Apr. 6, 1981, Ser. No. 251,488

Int. Cl.³ H01M *8/24*

U.S. Cl. 429—18 **14 Claims**

1. A fuel cell comprising an elongate container, a pair of flat, vertical, longitudinally spaced ion permeable fluid barrier membranes in the container and defining a central anode compartment and longitudinally spaced cathode compartments at the opposite ends of the anode compartment, a flat, vertical anode plate of metal fuel in the anode compartment in spaced parallel relationship with and between membranes, a flat, vertical electron distributor catalyst plate in each cathode compartment in spaced parallel relationship from the membrane of that compartment, a base electrolyte solution in the anode compartment, an acid cathode solution in the cathode compartments and electric circuit means connected with the anode plate to

conduct electrons from that plate and connected with the electron distributor catalyst plates to conduct electrons to



those plates for distribution and introduction into the cathode solution.

4,352,865

FUEL CELL MATRIX HAVING CURLING COMPENSATION

Renato DiPasquale, Toms River, N.J., assignor to Energy Research Corporation, Danbury, Conn.

Filed Jul. 30, 1981, Ser. No. 288,521

Int. Cl.³ H01M 2/14

U.S. Cl. 429—41 **17 Claims**

1. A fuel cell matrix for carrying an electrolyte comprising:

a first layer having opposing first and second surfaces;

second and third layers disposed adjacent said first and second surfaces, said first layer expanding to a different degree than said second layer upon the addition of said electrolyte, whereby said first and second layers tend to curl upon such electrolyte addition,

and said third layer expanding upon electrolyte addition such as to substantially cancel said curling of said first and second layers.

4,352,866

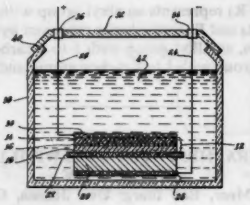
ELECTROCHEMICAL CELL WITH IMPROVED CATHODE CURRENT COLLECTOR AND METHOD

Keith A. Klinedinst, Marlborough, Mass., and Francis G. Murphy, Tiverton, R.I., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Division of Ser. No. 971,571, Dec. 20, 1978, Pat. No. 4,219,443. This application Jan. 30, 1980, Ser. No. 116,721

Int. Cl.³ H01M 6/14

U.S. Cl. 429—101 **18 Claims**



1. A primary electrochemical cell comprising:

(a) an oxidizable active anode material;

(b) a cathode current collector comprising

a layer of finely-divided catalyst for reducing the soluble cathode,

an inert, electrically-conductive substrate, and

a thin, fused, intermediate bonding layer comprising a finely-divided thermoplastic polymer and a minor amount of a finely-divided, inert, electrically-conductive material bonding the layer of finely-divided catalyst to the substrate,

the thickness of the cathode current collector being less than 400 micrometers; and

(c) an electrolytic solution, in contact with the anode and cathode current collector, comprising a reducible soluble cathode and an electrolyte solute dissolved therein.

4,352,867

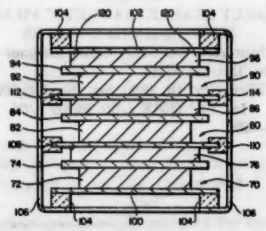
ELECTROCHEMICAL CELL STRUCTURE

Vincent O. Catanzarite, Las Vegas, Nev., assignor to Altus Corporation, San Jose, Calif.

Division of Ser. No. 144,650, Apr. 28, 1980. This application Sep. 25, 1981, Ser. No. 305,463

Int. Cl.³ H01M 6/14

U.S. Cl. 429—101 **6 Claims**



1. A bipolar electrical battery including a plurality of cells providing the primary electrochemical path for current through said battery, each cell having

cathode means connected to a second cell terminal,

anode means connected to a first terminal,

separator means located between said anode means and cathode means, and

electrolyte;

wherein each cell has at least one cell terminal being common with a cell terminal of an adjacent cell;

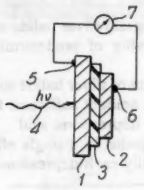
said battery further characterized in that in each cell a portion of said anode means is juxtaposed with the said second cell terminal but mechanically spaced therefrom by said separator means thereby forming a low-resistance secondary electrochemical path for current externally imposed upon said battery which is different from said primary path, said second path including in each cell said portion of said anode means, said separator means and said second cell terminal.

4,352,868

DOUBLE PHOTOELECTROCHEMICAL CELL FOR CONVERSION OF SOLAR ENERGY TO ELECTRICITY

Terje Skotheim, IFM, University of Linköping, 581 83 Linköping, Sweden

Filed Nov. 18, 1980, Ser. No. 208,059
Int. Cl.³ H01M 6/36
U.S. Cl. 429—111 14 Claims



1. A multiple junction photoelectric device for converting incident electromagnetic radiation into electricity comprising a first semiconductor having a first band gap and a first conductivity type; a second semiconductor having a different band gap and opposite conductivity type; a thin dry solid film polymer electrolyte between said first and second semiconductors; said polymer electrolyte being transparent, and capable of transporting electric charges between the two semiconductors; one of said semiconductors being partially transparent, absorbing part of the spectrum of incident radiation and the other absorbing other parts of the spectrum of radiation.

4,352,869

SOLID STATE ELECTROLYTES

Geoffrey W. Mellors, North Royalton, Ohio, assignor to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 219,875, Dec. 24, 1980, abandoned. This application Jul. 6, 1981, Ser. No. 280,486
Int. Cl.³ H01M 6/18
U.S. Cl. 429—191 11 Claims

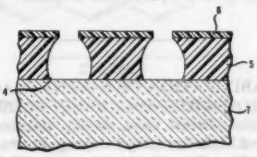
1. A composition which can be used as a solid state electrolyte comprising at least 70 mole percent of at least one trifluoride selected from the group consisting of cerium trifluoride and lanthanum trifluoride, at least one alkaline earth metal compound selected from the group consisting of fluorides, chlorides and carbonates; and at least one alkali metal compound selected from the group consisting of fluorides, sulfates, chlorides and carbonates.

4,352,870

HIGH RESOLUTION TWO-LAYER RESISTS

Richard E. Howard, Holmdel; Evelyn L. Hu, Somerset, and Lawrence D. Jackel, Holmdel, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation of Ser. No. 97,809, Nov. 27, 1979, abandoned. This application Mar. 27, 1981, Ser. No. 248,267
Int. Cl.³ G03C 1/68
U.S. Cl. 430—271 9 Claims



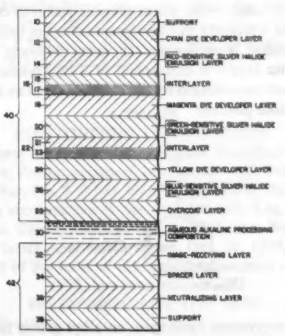
1. A resist element comprising an upper positive resist layer in intimate contact with a lower positive resist layer wherein said lower positive resist layer is in intimate contact with a substrate and wherein said upper and lower resist materials undergo a change upon impingement of exposing energy CHARACTERIZED IN THAT the sensitivity of said lower resist material is greater than the sensitivity of said upper resist material, said lower resist material requires less than one-half the development time as that required for an equal thickness of said upper resist material, and the thickness of said lower resist material is greater than the thickness of said upper resist material wherein said upper resist material and the thickness of said upper resist material are chosen to allow production of an aperture in the upper surface of 5000 Å or less whereby the sensitivities and thicknesses of said upper and lower layers yield a resolution better than 5000 Å upon using said exposing energy.

4,352,871

POLYMERIC HYDROXAMIC ACID POLYVALENT METAL SALT INTERLAYER FOR PHOTOGRAPHIC DIFFUSION TRANSFER PRODUCTS

Lloyd D. Taylor, Lexington, and William C. Schwarzel, Billerica, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 17, 1980, Ser. No. 217,548
Int. Cl.³ G03C 5/54, 1/42
U.S. Cl. 430—505 20 Claims



1. A photosensitive element for use in diffusion transfer photographic processes which comprises:

at least two selectively sensitized silver halide layers having image-dye forming materials associated herewith; and

an interlayer separating said silver halide layers comprising an alkali-permeable polymeric hydroxamic acid polyvalent metal salt, said interlayer comprising said alkali-permeable polymeric hydroxamic acid polyvalent metal salt serving as a barrier to migration of alkali-solubilized image-dye forming material and being rendered permeable to said alkali-solubilized image-dye forming material subsequent to contact of said interlayer with an organic alkali-soluble sequestering agent for the polyvalent metal of the polymeric hydroxamic acid salt.

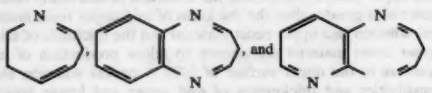
4,352,872

STABILIZATION OF LATENT IMAGES IN PHOTOTHERMOGRAPHIC ELEMENTS

Jack E. Reece, Forest Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 27, 1981, Ser. No. 239,011
Int. Cl.³ G03C 1/02
U.S. Cl. 430—523 13 Claims

1. A photothermographic element comprising a binder, light sensitive silver halide in catalytic proximity to a light insensitive silver source material in said element which contains a reducible source of silver ions, a reducing agent for silver ion and an effective latent image stabilizing amount of a compound selected from the class consisting of diazepines and fused aromatic diazepines having a central nucleus selected from the group consisting of



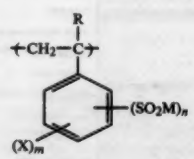
4,352,873

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIALS

Yuzo Toda; Junji Koizumi; Masasi Ogawa; Hidefumi Sera, and Seiiti Kubodera, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 27, 1981, Ser. No. 258,216
Claims priority, application Japan, Apr. 25, 1980, 55-55085
Int. Cl.³ G03C 1/40, 1/72
U.S. Cl. 430—545 9 Claims

1. A silver halide color photographic material comprising: a support; and a pluraity of photographic layers including silver halide emulsion layer formed thereon, wherein one of said photographic layers is comprised of a compound containing recurring unit represented by the formula (I) in an amount of at least 0.01 mole percent



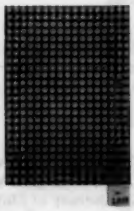
wherein R represents hydrogen, an alkyl group having 1 to 6 carbon atoms, or a halogen group; M represents hydrogen, an alkali metal, an alkaline earth metal, or an organic base; X represents an alkyl group having 1 to 6 carbon atoms, an alkoxy group, an alkylamino group or a halogen group; m represents 0, 1, or 2 and n represents 1 or 2.

4,352,874

METHOD FOR FORMING A PHOTOSENSITIVE SILVER HALIDE ELEMENT

Edwin H. Land, Cambridge, and Vivian K. Walworth, Concord, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 2, 1981, Ser. No. 298,638
Int. Cl.³ G03C 1/76, 1/02
U.S. Cl. 430—568 35 Claims



20. A method for forming a photosensitive element comprising a plurality of single effective silver halide grains in a predetermined spaced array which comprises the following steps in sequence:

(a) depositing a fine-grain silver halide emulsion in a surface containing a plurality of predetermined spaced depressions;

(b) applying a solution of silver halide solvent saturated with a silver salt in an amount sufficient to partially dissolve said grains in said depressions; said

(c) coalescing said grains to a single effective silver halide grain in substantially each depression.

4,352,875

VOLTAGE DISTRIBUTION DIFFERENCE ELECTROPHOTOGRAPHIC PROCESS

Shunichi Ishihara, Kodaira; Yuji Nishigaki, Tokyo; Nobuo Kitajima, Toride, and Nobuko Kitahara, Tama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 27, 1981, Ser. No. 228,723
Claims priority, application Japan, Feb. 5, 1980, 55-12684; Mar. 4, 1980, 55-27734
Int. Cl.³ G03G 13/01
U.S. Cl. 430—42 5 Claims

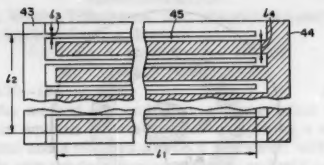
1. An electrophotographic process which comprises:

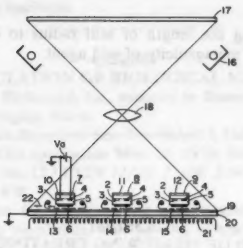
applying voltage between a transparent electrode and an opaque electrode of an electrophotographic photosensitive member comprising isolated electrically conductive members forming image elements, a photoconductive layer, transparent electrodes and opaque electrodes, conducting imagewise exposure from the side opposite to the side where the isolated electrically conductive members are arranged, resulting in the formation of differences with regard to a distribution voltage between the area where light passes through a transparent electrode and the area where light does not pass through the transparent electrode, said distribution voltage being a voltage distributed between the transparent electrode and the isolated electrically conductive electrode and a voltage distributed between the opaque electrode and the isolated electrically conductive member thereby forming a voltage image depending upon the change of voltage of the isolated electrically conductive member produced corresponding to the difference in the distribution voltage, and

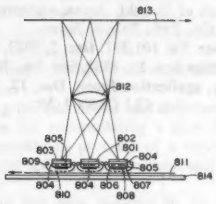
(a) scanning the electrophotographic photosensitive member within the area where imagewise exposure is carried out, or

(b) moving an image receiving member and an optical image projected on the electrophotographic photosensitive

member in relatively opposite directions, simultaneously with the attachment of a developer to the image receiving







member based on an electric field produced by the voltage image.

4,352,876

COMPLEX TYPE ELECTROPHOTOGRAPHIC PLATE AND ELECTROPHOTOGRAPHIC METHOD USING THE SAME

Shigeo Suzuki, Hitachi; Atsushi Kakuta, Hitachiota; Hiroyuki Oka, Hitachi; Yasuki Mori, Hitachi, and Hirosada Morishita, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

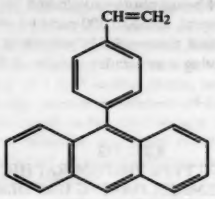
Filed Sep. 12, 1980, Ser. No. 186,651

Claims priority, application Japan, Sep. 14, 1979, 54-117308

Int. Cl.³ G03G *5/02, 5/14*

U.S. Cl. 430—58 **19 Claims**

1. In a complex type electrophotographic plate comprising an electroconductive support and a photosensitive material layer containing a charge generating layer and a charge transport layer formed on the electroconductive support, the improvement wherein the charge generating layer contains a copper phthalocyanine and the charge transport layer contains (a) a nitrofluorenone and (b) at least one polycyclic aromatic vinyl polymer selected from the group consisting of a homopolymer of a polyacrylic aromatic vinyl compound, a copolymer of said polycyclic aromatic vinyl compound and one or more other vinyl compounds, a brominated homopolymer of said polycyclic aromatic vinyl compound and a brominated copolymer of said polycyclic aromatic vinyl compound and one or more of said other vinyl compounds, said polycyclic aromatic vinyl compound being represented by the formula:



(III)

4,352,877

ELECTROPHOTOGRAPHIC DEVELOPING PROCESS USING FLASH FIXATION AND TONER THEREFOR

Toshiaki Narusawa, Sagamihara; Seiji Okada, Kawasaki; Kiyohide Muramatsu, Tokyo; Teruo Yagishita, Yokohama, and Hirohumi Okuyama, Sagamihara, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

PCT No. PCT/JP80/00187, § 371 Date Apr. 22, 1981, § 102(e) Date Apr. 21, 1981, PCT Pub. No. WO81/00628, PCT Pub. Date Mar. 5, 1981

PCT Filed Aug. 20, 1980, Ser. No. 253,837

Claims priority, application Japan, Aug. 22, 1979, 54-105954

Int. Cl.³ G03G *13/12*

U.S. Cl. 430—97 **5 Claims**

1. An improvement in an electrophotographic process for developing an electrostatic latent image with finely divided toner particles and fixing the developed image by irradiating it with a high energy ultraviolet or visible light, said improvement comprising using as the toner particles those which consist essentially of, based on the weight of the toner particles, 0.6 to 8% by weight of carbon as a colorant and 0 to 50% by weight of a dye as a colorant, and 62 to 99.4% by weight of a binder resin; at least 95% by weight of said binder resin being a bisphenol A/epichlorohydrin type epoxy resin having a melting point of from 60° to 160° C., an epoxy equivalent of from about 450 to about 5,500 and a weight average molecular weight of from about 900 to about 8,250.

5. An improvement in an electrophotographic process for developing an electrostatic latent image with finely divided toner particles and fixing the developed image by irradiating it with a high energy ultraviolet or visible light, said improvement comprising using as the toner particles those which consist essentially of, based on the weight of the toner particles, 0.6 to 8% by weight of carbon as a colorant and 0 to 5% by weight of a dye as a colorant, 62 to 99.4% by weight of a binder resin, and about 1% to about 20% by weight of a montanic acid ester wax, at least 95% by weight of said binder resin being a bisphenol A/epichlorohydrin type epoxy resin having a melting point of from 60° to 160° C., an epoxy equivalent of from about 450 to about 5,500 and a weight average molecular weight of from about 900 to about 8,250.

4,352,878

PHOTORESIST COMPOSITION

Kiyoshi Miura; Naomitsu Watanabe, and Yoshifumi Tomita, all of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 970,363, Dec. 28, 1978, Pat. No. 4,254,197, which is a continuation of Ser. No. 496,854, Aug. 12, 1974, abandoned. This application Oct. 6, 1980, Ser. No. 194,465

Claims priority, application Japan, Oct. 24, 1973, 48/119006

The portion of the term of this patent subsequent to Mar. 24, 1998, has been disclaimed.

Int. Cl.³ G03C *1/74, 1/71, 1/78*

U.S. Cl. 430—167 **13 Claims**

1. A photoresist coated article which comprises a photosensitive photoresist layer on a glass substrate in which a photoresist composition is coated on the substrate by rotation of said substrate and the composition is allowed to dry to form said photoresist layer, the photoresist composition comprising a

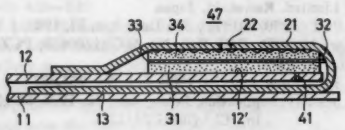
bisazide photo-crosslinking agent, a water-soluble polymeric substance capable of being photo-crosslinked by said bisazide photo-crosslinking agent, and 5 to 300 parts by weight per 100 parts by weight of said water-soluble polymeric substance of dihydric alcohol having a molecular weight of 60 to 110.

4,352,879

SELF-PROCESSING TYPE PHOTOGRAPHIC FILM UNIT WITH A TRAP MEMBER HAVING GAS DISCHARGING MEANS

Yoshio Hara, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 26, 1980, Ser. No. 210,713
Claims priority, application Japan, Nov. 29, 1979, 54/154618
Int. Cl.[3] G03C 1/48; G03D 9/02
U.S. Cl. 430—209 9 Claims



1. A self-processing type photographic film unit comprising: a first sheet member; a second sheet member; a bonding member disposed between said first and second sheet members and forming a single unit therewith; container means for holding processing solution, said container means being openable under an external pressure to discharge said processing solution into said unit; and trap means for catching surplus processing solution, said trap means comprising:

a trap cover member;

a partition member dividing a pouch-shaped hollow interior formed by said trap cover member into an upper chamber and a lower chamber and forming a U-shaped flow path which communicates with gas discharging through-holes formed in the upper surface of said trap cover member; and

first and second spacer members provided adjacent the lower and upper surfaces of said partition member, said first spacer member disposed in said lower chamber and said second spacer member disposed in said upper chamber, said first and second spacer members permitting said U-shaped flow path to pass gas in said unit and retaining surplus processing solution.

4,352,880

DIFFUSION BIOASSAY FOR THE QUANTITATIVE DETERMINATION OF MUTAGENICITY

Tamara E. Awerbuch, Cambridge, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

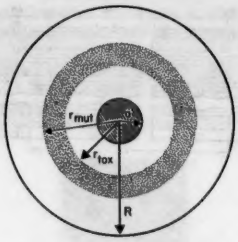
Filed Sep. 17, 1979, Ser. No. 76,199
Int. Cl.[3] C12Q 1/68
U.S. Cl. 435—6 6 Claims

1. A bioassay for determining the degree of mutagenicity of an agent, comprising:

a. forming a culture of living cells, said cells being a tester strain for mutagenesis;

b. applying a spot of test agent in known concentration to said culture whereby said test agent diffuses outwardly from said spot to form a ring-shaped mutagenic band in which viable mutant cells are produced, said ring-shaped mutagenic band being concentric to the spot of test agent;

c. measuring the length of a radius from said spot to said ring-shaped mutagenic band; and,



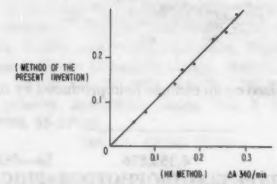
d. employing the length of said radius to determine the degree of mutagenicity of said agent.

4,352,881

METHOD OF MEASURING CREATINE KINASE ACTIVITY

Masanobu Inagawa; Toshiyuki Sai; Seiichi Kawarabuki, and Naoto Miwa, all of Ibaraki, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 101,381, Dec. 7, 1979, abandoned. This application Sep. 16, 1981, Ser. No. 302,868
Claims priority, application Japan, Dec. 12, 1978, 53-153311
Int. Cl.[3] C12Q 1/50
U.S. Cl. 435—17 4 Claims



1. A method for measuring creatine kinase (CK) activity which comprises combining a test sample with the reagents necessary to carry out the following reactions at a pH of about 6 to 7.5:

Creatine phosphate + ADP ⇄ Creatine + ATP (1)

ATP + 3-Phosphoglycerate ⇄ ADP + 1,3-Diphosphoglycerate (2)

1,3-[Phosphoglycerate]Diphosphoglycerate + NADH ⇄ Glyceraldehyde-3-phosphate + NAD + Inorganic phosphate (3)

wherein one of those reagents is a composition consisting essentially of 0.5 to 50 u/ml of phosphoglycerate kinase (PGK) and 0.5 to 100 u/ml of glyceraldehyde-3-phosphate dehydrogenase (GAPDH), the ratio of PGK to GAPDH being about 1:0.2 to 2 and the total amount of PGK and GAPDH in the test being about 0.1 to 30 mg/ml, and as another one of said reagents a buffer solution capable of maintaining said pH of about 6 to 7.5, and optically measuring the rate of reduction of NADH optical absorption.

4,352,882

PRODUCTION OF XANTHAN GUM BY EMULSION FERMENTATION

Lucien G. Maury, Wilmington, Del., assignor to Kelco Biospecialties Limited, London, England

Filed Sep. 8, 1981, Ser. No. 299,709
Int. Cl.³ C12P *19/04, 19/06*
U.S. Cl. 435—101 4 Claims

1. In the method of conducting a fermentation reaction wherein an aqueous culture medium comprising a carbohydrate source and a nitrogen source is inoculated with a polysaccharide gum producing microorganism and said medium is mechanically agitated and aerated under conditions to effect fermentation thereof, the improvement which comprises said culture medium being dispersed in about 20 to 80% of its weight of a water insoluble oil in which the resultant polysaccharide is also insoluble.

4,352,883

ENCAPSULATION OF BIOLOGICAL MATERIAL

Franklin Lim, Richmond, Va., assignor to Damon Corporation, Needham Heights, Mass.

Continuation-in-part of Ser. No. 953,413, Oct. 23, 1978, abandoned. This application Mar. 28, 1979, Ser. No. 24,600
Int. Cl.³ C12N *11/10, 11/04, 5/00*
U.S. Cl. 435—178 22 Claims

2. A process for encapsulating a core material within a semipermeable membrane, said process comprising the steps of:

A. placing the material in a solution of a water-soluble substance that can be reversibly gelled;

B. forming the solution into droplets;

C. gelling the droplets to produce discrete shape-retaining temporary capsules;

D. forming semipermeable membranes about the temporary capsules; and

E. reliquifying the gel within said membranes.

13. A process for encapsulating a core material within a membrane permeable to proteins of a molecular weight no greater than about 100 thousand daltons, said process comprising the steps of:

A. suspending the core material in an aqueous medium which contains a water-soluble gum containing acid groups;

B. forming the suspension into droplets;

C. subjecting the droplets to a solution of multivalent, cations to gel the droplets as discrete, shape-retaining, water insoluble temporary capsules; and

D. permanently cross-linking surface layers of said temporary capsules to produce a semipermeable membrane about said droplets by subjecting them to a polymer containing substitutents reactive with the acid groups of said gum, said polymer having a molecular weight within the range of 3000–100,000 daltons.

4,352,884

CARRIER HAVING ACRYLATE COPOLYMER COATING FOR IMMOBILIZATION OF BIOACTIVE MATERIALS

Toshihide Nakashima; Masao Tanihara, both of Kurashiki, and Koichi Takakura, Okayama, all of Japan, assignors to Kuraray Co., Ltd, Kurashiki, Japan

Filed Feb. 9, 1981, Ser. No. 232,394
Claims priority, application Japan, Feb. 19, 1980, 55-19906
Int. Cl.³ G01N *33/50, 33/54, 31/08, 27/30*
U.S. Cl. 435—180 14 Claims

1. A carrier for immobilization of bio-active materials which comprises a base material coated with a copolymer of (i) a hydrophilic acrylate or methacrylate monomer of the general formula $CH_2=(R_1)CO_2R_2OR_3$, wherein R_1 is H or methyl; R_2 is a substituted or unsubstituted divalent alkylene radical of 2 to 3 carbon atoms or a poly(oxyalkylene) radical; R_3 is H or an alkyl radical of 1 to 3 carbon atoms, which alkyl radical can be further substituted by polar substituent groups and (ii) a copolymerizable unsaturated carboxylic acid of the general formula $CH_2=C(R_1)CO_2H$, wherein R_1 is H or methyl or (iii) a copolymerizable unsaturated amine of the general formula $CH_2=C(R_1)CO_2R_2NHR_3$, wherein R_1 is H or methyl; R_2 is a divalent alkylene radical of 2 or 3 carbon atoms; and R_3 is H or an alkyl radical of 1 to 3 carbon atoms, said copolymerizable component being present in amount of from about 1 to 50 weight percent based on the total weight of monomers.

6. A clinical selective adsorbent comprising a bio-active material immobilized on a base material coated with a copolymer as claimed in claim 1.

4,352,885

PREPARATION OF A NOVEL NADP LINKED ALCOHOL-ALDEHYDE/KETONE OXIDOREDUCTASE FROM THERMOPHILIC ANAEROBIC BACTERIA FOR ANALYTICAL AND COMMERCIAL USE

Joseph G. Zeikus, Madison, Wis., and Raphael J. Lamed, Schenectady, N.Y., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed May 9, 1980, Ser. No. 148,243
Int. Cl.³ C12N *9/02, 9/04;* C12Q *1/32*
U.S. Cl. 435—189 6 Claims

1. A method for producing thermostable enzymes, said method comprising the steps of:

(a) inoculating a culture medium with a strain of thermophilic bacteria selected from the group consisting of *Thermoanaerobium brockii* and *Clostridium thermohydrosulfuricum;*

(b) incubating said bacteria at a temperature between 50° C. and 75° C.;

(c) purifying the bacteria from spent culture supernatant fluids by heating to a temperature in the range of 85°–98° C.; and

(d) isolating from the bacteria thermostable NADP linked alcohol, aldehyde/ketone oxidoreductases that are formed.

4,352,886

PROCESS FOR TREATING WASTEWATER CONTAINING PHENOLICS AND MICROORGANISM CAPABLE OF DEGRADING PHENOLICS

Lewis J. Pillis, Roanoke, and Lois T. Davis, Salem, both of Va., assignors to Sybron Corporation, Rochester, N.Y.

Filed Jan. 27, 1981, Ser. No. 229,025
Int. Cl.³ C07C *7/00*
U.S. Cl. 435—262 7 Claims

1. A process for removing phenolics wastewater containing the same comprising treating wastewater containing the phenolics with *Pseudomonas putida* CB-173 (ATCC-31800) under aerobic conditions for a time sufficient to degrade the phenolics present in the wastewater and remove them or break them down into components capable of being degraded by other organisms normally found in the biological wastewater treatment systems.

4,352,887

METHOD AND ARTICLE FOR CULTURING DIFFERENTIATED CELLS

Lola C. M. Reid, Rye, N.Y., and Marcos Rojkind, Ciudad Satelite, Mexico, assignors to Albert Einstein College of Medicine of Yeshiva University, Bronx, N.Y.

Filed Oct. 29, 1979, Ser. No. 89,167
Int. Cl.³ C12M *3/00;* C12N *5/00, 5/02*
U.S. Cl. 435—240 32 Claims

1. A method for in vitro culturing of differentiated cells comprising providing connective tissue-derived fibers comprising collagens, non-collagenous proteins and carbohydrates as a substrate for an in vitro differentiated cell culture whereby the differentiated cell culture remains substantially differentiated.

23. A cell culture solid-state support consisting essentially of

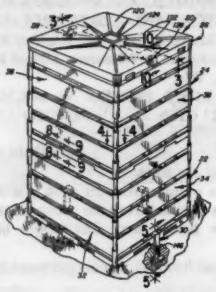
a base support for containing a culture medium and said cells cultured thereon and a plurality of connective tissue derived fibers disposed within said base support, said connective tissue-derived fibers consisting essentially of collagens, non-collagenous proteins and carbohydrates.

4,352,888

CONTAINER FOR HOLDING ORGANIC MATTER DURING DECOMPOSITION

Cosmo N. Tisbo, and Thomas A. Tisbo, both of Barrington, Ill., assignors to Custom Plastics, Inc., Elk Grove Village, Ill.

Filed Dec. 23, 1981, Ser. No. 333,701
Int. Cl.³ C12M *1/00*
U.S. Cl. 435—287 12 Claims



1. A plastic container for holding organic matter during decomposition of said organic matter comprising: a lower section including a plurality of flat sides positioned in a substantially vertical attitude joined at opposite edges to form a closed figure having an open bottom, an upper section including an equal number of flat sides as the lower section, the flat sides of the upper section positioned in a substantially vertical attitude joined at opposite edges to form a closed figure mounted on the lower section with the respective flat sides of the upper and lower sections being vertically aligned, each of said flat sides having a rectangular outline, each of said flat sides having a bead along a vertical edge, an elongated socket formed integral with the opposite vertical edge of each of said flat sides, each socket being adapted for slidably receiving the bead of a flat side in its respective section, each of said flat sides having a plurality of horizontal recesses, a vent in each of the recesses to allow gases to pass from one side of the flat side to the other side of the flat side, each flat side having an indentation on its upper edge, a ridge formed integral with the flat side in the indentation, each of said flat sides having a flexible ear on its lower edge mateably releasably positionable in the indentation on a like flat side, each ear having a groove for mateably receiving the ridge in the indentation for locking adjacent flat sides to each other, and a cover removably engageable with the upper edge of the upper section.

4,352,889

TIN OXIDE, TITANIUM OXIDE AND/OR ZIRCONIUM OXIDE COATED β-EUCRYPTITE PARTICLES HAVING A NEGATIVE COEFFICIENT OF LINEAR THERMAL EXPANSION AND SEALING COMPOSITIONS CONTAINING SAID PARTICLES

Akio Takami, and Kazuo Kondo, both of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan

Division of Ser. No. 77,810, Sep. 21, 1979, Pat. No. 4,310,598.
This application Sep. 14, 1981, Ser. No. 301,860
Claims priority, application Japan, Sep. 21, 1978, 53-116318; Jan. 5, 1979, 54-41
Int. Cl.³ C03C *3/10, 14/00, 3/30*
U.S. Cl. 501—15 8 Claims

1. A sealing composition having low expansivity which consists essentially of up to about 30% by weight of β-eucryptite particles and a lead borate glass, said β-eucryptite particles having on the surface thereof a single layer of or multiple layers of a member selected from the group consisting of tin oxide, titanium oxide, zirconium oxide and a mixture of two or more of said oxides, said oxides being present in a thickness of about 1 micron or less.

4,352,890

DIOPSIDE CRYSTAL PRECURSOR GLASS FRIT FLUX IN PRODUCTION OF SANITARY WARE AND FELDSPATHIC BODIES

Werner F. Votava, Broadview Heights, Ohio, assignor to Ferro Corporation, Cleveland, Ohio

Division of Ser. No. 188,919, Sep. 19, 1980, Pat. No. 4,337,316.
This application Nov. 23, 1981, Ser. No. 323,810
Int. Cl.³ C04B *33/00, 33/24*
U.S. Cl. 501—141 8 Claims

1. In a process of forming ceramic materials into a sanitaryware body and then firing the body to a solid form, the improvement comprising incorporating with said material a completely vitrified, clear frit containing in solution the diopside precursors, CaO, MgO and SiO_2, precipitating crystals of diopside from said frit in situ during said firing of the body, said frit constituting from about 0.1 to 10% weight of said body, said precipitated crystals having an average particle size less than one micron, said firing being carried out at a lower temperature than would be required in the absence of said crystals, said frit containing deflocculent oxides in a quantity sufficient to counterbalance the effect of flocculent alkaline earths present to the extent they are respectively leached upon dispersal of said frit in a ceramic slip, said frit having essentially a composition of about:

	Wt. %
CaO	15 to 25
MgO	10 to 20
SiO_2	35 to 50
Additive	5 to 20

said additive being selected from one or more of the following in approximately the percent indicated based on the total weight of the glass:

K_2O	0 to 5%
Na_2O	0 to 10%
Li_2O	0 to 5%
Al_2O_3	0 to 12%

2. The process of claim 1 wherein the frit contains 0 to 3.6 weight percent P_2O_5.

4,352,891

DIETHYLCARBAMAZINE RESINATE AND STYRLPYRIDINIUM RESINATE-DIETHYLCARBAMAZINE RESINATE EDIBLE ANTHELMINTIC TABLETS FOR COMPANION ANIMALS

James M. Quinlan, Trenton, N.J., assignor to American Cyanamid Co., Stamford, Conn.

Continuation-in-part of Ser. No. 74,211, Sep. 10, 1979, abandoned. This application Oct. 14, 1980, Ser. No. 196,242
Int. Cl.³ B01J *41/12;* A61K *31/495*
U.S. Cl. 521—32 5 Claims

1. A palatable, anthelmintic resinate composition having improved storage and handling characteristics, comprising: about 3% by weight of diethylcarbamazine resinate; about 1.75 to 5.0% by weight of polyvinylpyrrolidone, carboxypolymethylene or mixtures thereof; 20% to 30% by weight of

desiccated liver; 30% to 20% by weight of Brewers yeast and from 42% to 45.25% by weight of dried whey.

4,352,892

METHOD FOR THE MANUFACTURE OF LIGHTWEIGHT FOAM MATERIALS FROM CRYSTALLINE THERMOPLASTIC MATERIALS AND THE RESULTANT PRODUCTS

Ernst Lohmar, Weinheim an der Bergstrasse, Fed. Rep. of Germany, assignor to Firma Carl Freudenberg, Weinheim an der Bergstrasse, Fed. Rep. of Germany

Filed Mar. 10, 1980, Ser. No. 129,166

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1979, 2911719

Int. Cl.³ B29D *27/00*

U.S. Cl. 521—79 **32 Claims**

1. A method of preparing a lightweight foam material which comprises:

(a) forming a melt of a crystalline polyolefin in the presence of about 2 to 20 percent by weight of said crystalline polyolefin of a second polyolefin component in an extruder; wherein said second polyolefin component is selected from the group consisting of polybutadiene, an ethylene vinylacetate copolymer and an ethylene-propylene terpolymer; said melt including a radical former and a radical decomposition inhibitor wherein said radical decomposition inhibitor is selected from the group consisting of: trimethylolpropanetrimethacrylate, allylmethacrylate, tetrahydrofurylmethacrylate, triethyleneglycol-dimethacrylate and polyethylene glycol-dimethylacrylate; and

(b) injecting a volatile organic solvent foaming agent into said melt, said foaming agent comprising from about 5 to 30% by weight of said polyolefins and wherein said foaming agent and said melt are mixed at a temperature of about 180° C. to about 280° C., and at a pressure which is greater than the vapor pressure of the foaming agent, followed by

(c) extruding said melt and foaming agent from said extruder to provide a foam product having a specific bulk weight of from about 30 to about 200 kg/m^3.

4,352,893

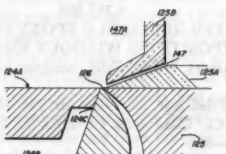
PRODUCTION OF FOAMED POLYMER

D. Emil Johnson, Canandaigua, and G. Vincent Sharps, Jr., Fairport, both of N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 61,980, Jul. 30, 1977, abandoned. This application Jul. 14, 1980, Ser. No. 153,301

Int. Cl.³ B29D *27/00*

U.S. Cl. 521—79 **16 Claims**



1. In a method for the production of foam sheet by forming an extrudable, foamable mass containing styrenic polymer and a foaming agent; extruding said mass from an annular die in a tubular form into an extrusion zone; drawing said tubular extrudate over an internal mandrel; and slitting said drawn tube to form a sheet; the improvement which comprises:

providing an annular inner orifice means having inner lip means defining an inner orifice surface and annular outer orifice means cooperating with said inner orifice means to form a slit-ring extrusion orifice with outer lip means defining an outer orifice surface, said inner and outer orifice means defining a flow passage for molten extrudate;

isolating the molten extrudate in a flow passage thermally from a liquid coolant medium;

extruding said foamable polymer directly into said liquid coolant medium maintained at a temperature of about 30° C. to 85° C., at ambient pressure, said coolant medium being contacted with said foamable polymer at a flow rate sufficient to prevent substantially boiling thereof by directing liquid coolant from a flow means adjacent the orifice toward the extruded polymer; and

foaming said extrudate in said liquid coolant medium to form a tubular foam structure having improved tensile properties and puncture resistance.

8. A foam structure which has been produced with the method as defined in claim 1.

4,352,894

STABLE AQUEOUS IMPREGNATING SOLUTIONS PREPARED FROM HYDROLYZED ALKYLTRIALKOXYSILANES

Werner Schmidt, St. Augustin, Fed. Rep. of Germany, assignor to Dynamit Nobel, Troisdorf, Fed. Rep. of Germany

Filed Sep. 22, 1981, Ser. No. 304,480

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1980, 3037220

Int. Cl.³ C08J *9/40*

U.S. Cl. 521—91 **4 Claims**

1. Method of impregnating a foamed polyvinyl alcohol plastic for the purpose of rendering it water repellent which comprises impregnating said foamed polyvinyl alcohol with a stable aqueous solution of hydrolyzed alkyltrialkoxysilane wherein the hydrolyzed alkyltrialkoxysilane has the formula $CH_3—CH_2—Si(OH)_n(OR')_{3-n}$ wherein R' stands for an alkyl radical having from 1 to 4 carbon atoms and n can assume values between 1 and 3.

4,352,895

PROCESS AND DEVICE FOR THE CONTINUOUS PRODUCTION OF PLATES FROM FOAMED SYNTHETIC RESINS

Karl-Heinz Hilterhaus, Georgsmarienhütte, Fed. Rep. of Germany, assignor to Chemie-Anlagenbau Bischofsheim GmbH, Osnabruck, Fed. Rep. of Germany

Filed Sep. 5, 1980, Ser. No. 184,245

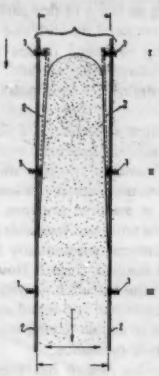
Claims priority, application Fed. Rep. of Germany, Sep. 11, 1979, 2936613

Int. Cl.³ B29D *27/04*

U.S. Cl. 521—99 **8 Claims**

1. A process for making a foamed synthetic resin panel which comprises pouring a liquid foamable synthetic resin mixture on an endless belt between laterally spaced endless running bands upstanding from the endless belt, allowing the said foamable mixture to foam and expand between said bands and exert a lateral pressure outwardly against the said bands, applying external pressure against the bands at longitudinally spaced points to overcome the pressure exerted by the foaming mixture and control separation of the endless bands with the pressure applied to said points decreasing progressively from

point to point along the length of the endless belt until the bands are spaced apart a width equal to the desired width of



the panel and allowing the foaming mixture to solidify while the bands are thus spread apart.

4,352,896

POLYOL MIXTURES CONTAINING REACTIVE BLOWING AGENTS AND USE THEREOF FOR THE PRODUCTION OF FOAMED POLYURETHANES

Richard Kopp, Cologne; Holger Meyborg, Odenthal, and Jürgen Schwindt, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 8, 1981, Ser. No. 309,636

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1980, 3039883

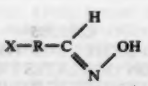
Int. Cl.³ C08G *18/14, 18/32*

U.S. Cl. 521—118 **16 Claims**

1. Mixtures containing aldoximes as blowing agents comprising

(A) a polyol or polyol mixture which is liquid below 45° C. and has an average molecular weight of from 400 to 10,000 in which is dissolved

(B) from 0.1 to 20%, by weight, of an aldoxime reactive blowing agent corresponding to the following general formula:



wherein

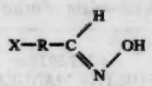
X represents —OH, —COOH, an aromatically-bound amino-NH_2, or an aromatically-bound —NH— (C_1–C_8) group; and

R represents an aliphatic radical containing from 1 to 9 carbon atoms, a cycloaliphatic radical, an aromatic radical, or an araliphatic radical wherein the aliphatic radical is bound to the aromatic nucleus by an oxygen atom.

13. A process for the preparation of a polyurethane foam comprising reacting an organic polyisocyanate with mixtures comprising

(A) a polyol or polyol mixture which is liquid below 45° C. and has an average molecular weight of from 400 to 10,000 in which is dissolved

(B) from 0.1 to 20%, by weight, of an aldoxime reactive blowing agent corresponding to the following general formula



wherein

X represents —OH, —COOH, an aromatically-bound amino-NH_2, or an aromatically-bound —NH—(C_1—C_8) group; and

R represents an aliphatic radical containing from 1 to 9 carbon atoms, a cycloaliphatic radical, an aromatic radical, or an araliphatic radical wherein the aliphatic radical is bound to the aromatic nucleus by an oxygen atom.

4,352,897

RESIN MOLDED STATORS

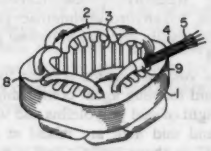
Masatsugu Ogata; Hirokazu Takasaki, both of Hitachi; Masanori Nemoto; Toshikazu Narahara, both of Ibaraki; Kenichi Hironaka, and Tetuo Ishikawa, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 14, 1979, Ser. No. 103,506

Claims priority, application Japan, Dec. 20, 1978, 53-156348

Int. Cl.³ C08L *67/06*

U.S. Cl. 523—220 **12 Claims**



1. A resin molded stator comprising a stator core and coils as major constituents at least parts of which are molded into one piece by a molding material, said molding material comprising

(a) a low-shrink unsaturated polyester resin,

(b) a filler material consisting of particulate filler having a particle size of 44μ or less, and

(c) a fibrous material consisting of fibers having a length of 3 mm or less,

in proportions of 15 to 40% by weight of the component (a) and 60 to 85% by weight of a total of the components (b) and (c), and a weight ratio of the component (b) to the component (c) being 3 to 30/1; all of any filler material contained in the molding material consisting of component (b).

4,352,898

WATER-REDUCIBLE EPOXY COATING COMPOSITIONS WITHOUT EMULSIFIER

Richard A. Albers, Irvine, Calif., assignor to Deft, Inc., Irvine, Calif.

Filed Apr. 25, 1980, Ser. No. 143,916

Int. Cl.³ C08J *3/08;* C08L *63/00;* C07D *3/58*

U.S. Cl. 523—414 **51 Claims**

1. A homogeneous water-reducible coating composition comprising epoxy resin and sufficient modified polyamine resin to cure the epoxy resin, the modified polyamine resin being homogeneously reduced in an aqueous system comprising nitroparaffin in an amount of at least 2% by weight of the modified polyamine resin and water in an amount of at least 50% by weight of the modified polyamine resin, the composition containing substantially no emulsifier, the nitroparaffin having the formula C_nX_{2n+2} where n is an integer from 1 to 4 and each X is independently selected from the group consisting of chlorine, hydrogen, and NO_2, where at least one but no

more than two X's are NO_2, the modified polyamine resin being inherently insoluble and non-dispersible in water.

4,352,899

COATING COMPOSITION FOR METAL-SUBSTRATE

Fusao Tada, Toyonaka; Takeshi Itoh, Sakai; Joji Oka, Tokyo, and Akira Okamoto, Yokohama, all of Japan, assignors to Sakai Chemical Industry Co., Ltd., Osaka and Nippon Steel Corporation, Tokyo, both of, Japan

Filed Apr. 3, 1981, Ser. No. 250,676

Claims priority, application Japan, Apr. 5, 1980, 55/44950; Apr. 5, 1980, 55/44951

Int. Cl.³ C08L *63/00*

U.S. Cl. 523—451 2 Claims

1. A coating composition for a metal substrate which comprises (A) an epoxy resin, (B) an organic phosphorus compound, (C) zinc powder and (D) a magnesium compound dispersed in a liquid medium, the weight proportion of the components (A) and (B) being from 45:55 to 95:5, the content of the component (C) corresponding to from 30 to 95% by weight based on the total weight of the non-volatile components in the composition and the content of the component (D) being from 0.1 to 5% by weight based on the total weight of the non-volatile components in the composition.

4,352,900

STABILIZED THERMOSETTING POLYESTER

James G. Murray, East Brunswick, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 31, 1980, Ser. No. 221,609

Int. Cl.³ C08K *5/36*

U.S. Cl. 523—507 2 Claims

1. A formulation consisting essentially of a thermosetting polyester, p-methylstyrene, a hydroquinone stabilizer, and 4,4'-thiobis-(3-methyl-6-t-butyl)-phenol.

4,352,901

OPAQUE JET INK COMPOSITIONS

Dorothy Maxwell, and David A. Fell, both of Neenah, Wis., assignors to American Can Company, Greenwich, Conn.

Filed Aug. 14, 1980, Ser. No. 177,944

Int. Cl.³ C08L *1/14, 93/00;* C08K *5/07, 5/06*

U.S. Cl. 524—38 15 Claims

1. A non-pigmented jet ink composition for producing opaque indicia on non-porous substrates, the ink composition having a viscosity between 1.5 and 25 centipoises at 25° C. and consisting essentially of (A) 2 to 15% by weight of a gellable cellulose ester film former having a hydroxyl content of between 2 to 8% by weight selected from the group consisting of cellulose acetate, cellulose acetate proprionate and cellulose acetate butyrate and combinations thereof; (B) between 1.5 to 15% of a binding agent selected from the group consisting of rosin based ester resins and maleic type resins soluble in dilute alkali solutions, polyvinyl acetate resins, acrylic resins, polyvinyl acetate and acrylic copolymer resins, and combinations of the same; and (C) a solvent blend, the solvent blend being a mixture of (1) a solvent selected from the group consisting of aliphatic alcohols of one of three carbons, ethers of four to ten carbons, acetone, other aliphatic ketones of four to seven carbons, acetates of three to seven carbons, and compatible combinations of the same, said acetates and other ketones being less than 50% of the solvent present in the composition, and (2) a non-solvent of low volatility within which the film former is essentially insoluble, the non-solvent being between 2 and 10% by weight of the jet ink composition and being selected from the group consisting of wate and glycerin, said solvent blend not containing an azeotrope that solubilizes the film former, and the binding agent being soluble in the solvent blend.

4,352,902

EMULSION COMPOSITION CONTAINING CELLULOSE DERIVATIVE

Yasuharu Nakayama; Hiroshi Iwai, and Hajime Sukejima, all of Hiratsuka, Japan, assignors to Kansai Paint Co., Ltd., Hyogo, Japan

Filed Jan. 7, 1981, Ser. No. 223,148

Claims priority, application Japan, Jan. 8, 1980, 55-321; Feb. 1, 1980, 55-10015

Int. Cl.³ C08L *1/10*

U.S. Cl. 524—40 23 Claims

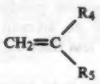
1. An emulsion composition which is the product of emulsion polymerization of a mixture of (A) at least one radical-polymerizable unsaturated monomer selected from the group consisting of vinyl aromatic compounds and acrylic and methacrylic acid esters and (B) at least one cellulose derivative having a number average moleculare weight of about 3,000 to about 200,000 and selected from ester-modified cellulose derivatives with an average degree of esterification of 15 to 70% and ether-modified cellulose derivatives with an average degree of etherification of 30 to 70%, in the presence of a water-soluble resin containing a graft-polymerizable unsaturated group in the side chain and having an acid value of 10 to 350 and a number average molecular weight of about 500 to about 100,000, said water-soluble resin being selected from the group consisting of:

(a) water-soluble resins obtained by the addition reaction of a carboxyl-containing vinyl polymer with a glycidyl containing vinyl monomer,

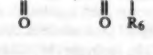
(b) water-soluble resins obtained by the addition reaction of a vinyl polymer containing both a carboxyl group and a hydroxyl group with vinyl isocyanate or a mono-addition product of a diisocyanate compound and a hydroxyl-containing acrylic monomer, and

(c) copolymers of

(i) a monomer containing one radical-polymerizable unsaturated group represented by the following formula



wherein R_4 represents a hydrogen atom or a methyl group, R_5 represents



a phenylene group or a lower alkylene group, and R_6 represents a hydrogen atom or a methyl or ethyl group,

and at least one graft-polymerizable unsaturated group,

(ii) an α,β-ethylenically unsaturated acid, and/or a monoester of a polyalkylene glycol and acrylic or methacrylic acid, and

(iii) another radical-polymerizable unsaturated monomer.

4,352,903

CHLORINATED THERMOPLASTICS STABILIZED WITH AMINOTHIOURACILS

Gerd Abeler, Darmstadt, Fed. Rep. of Germany, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

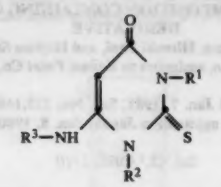
Filed Jun. 1, 1981, Ser. No. 268,558

Claims priority, application Switzerland, Jun. 2, 1980, 4261/80

Int. Cl.³ C08K *5/34*

U.S. Cl. 524—100 6 Claims

1. A thermoplastic moulding composition based on a polymer of vinyl chloride, said composition containing 0.1 to 5% by weight of a 2-thio-6-aminouracil of the formula I



(I)

wherein each of R^1 and R^2 independently is a hydrocarbon radical of 1 to 24 carbon atoms which can be substituted by —OH, —$COOR^4$, —$O(C{=}O)R^4$, —$(C{=}O)R^4$, halogen or amino, and R^3 is hydrogen, acyl of 2 to 24 carbon atoms or —$(C{=}O)NHR^4$, whilst R^4 is a hydrocarbon radical of 1 to 24 carbon atoms.

4,352,904

MOLDING RESINS

Edward J. Deyrup, Northeast, Md., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 882,219, Feb. 28, 1978, abandoned. This application Jan. 5, 1979, Ser. No. 631

Int. Cl.³ C08K *5/12, 5/20, 5/07, 5/41*

U.S. Cl. 524—292 **12 Claims**

1. A molding composition which provides articles having smooth, glossy surfaces on release from a mold consisting essentially of:

A. polyethylene terephthalate having an inherent viscosity of at least about 0.4;

B. between about 10 and about 60 percent by weight reinforcing or filling material;

C. a material selected from a sodium or potassium salt of a hydrocarbon acid containing between about 7 and 25 carbon atoms, or a sodium or potassium salt of an organic polymer which contains pendant carboxyl groups, said material present in an amount sufficient to provide a $\Delta H_H/\Delta H_C$ ratio of less than 0.25 to a mixture of components A, B and C;

D. a compound present in an amount sufficient to provide a Tpk at least 4° C. lower than the Tpk of a mixture of components A, B and C, said compound being selected from

(a) organic esters selected from the product of an aromatic carboxylic acid of 7–11 carbon atoms containing at least 1 carboxyl group per aromatic nucleus which is attached directly to said nucleus, and an alcohol selected from those of the formula $(HOCH_2\rightarrow_x R'$ wherein x is 1, 2 or 3 and R′ is a hydrocarbon radical of 2–15 carbon atoms or those of the formula $HO\text{-}(R''O\rightarrow_y R'''$ wherein y is a cardinal number between 1 and 15, R″ is a hydrocarbon radical of 2–15 carbon atoms, and R‴ is —H or a hydrocarbon radical of 2–20 carbon atoms,

(b) organic ketones of the formula

(c) organic sulfones of the formula RSOOR,

(d) organic sulfoxides of the formula R_2SO,

(e) organic nitriles of the formula RCN, or

(f) organic amides of the formula

wherein in formulas (b) through (f) each R can be the same as, or different from, any other R and is a hydrocarbyl group of 1–25 carbon atoms, while in the formulas in (f) R′ is hydrogen or a hydrocarbyl group of 1–25 carbon atoms.

4,352,905

POLYMERS CHARACTERIZED BY 1,3-IMIDAZOLIDINE-1,3-DIYL RINGS PLASTICIZED WITH DIARYL KETONES

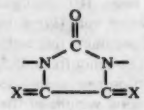
Tad L. Patton, Baytown, Tex., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Oct. 26, 1981, Ser. No. 314,899

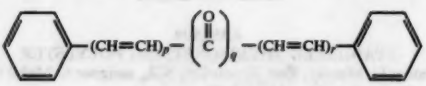
Int. Cl.³ C08K *5/07*

U.S. Cl. 524—359 **23 Claims**

1. A stable meltable composition comprising heterocyclic polymers characterized in the repeating units by the tri-substituted 1,3-imidazolidine-1,3-diyl ring:



wherein X=0 or NH, provided at least one X is 0 and a plasticizing amount of diarly ketone



wherein p is 0 to 2, q is 1 or 2 and r is 0 to 2.

4,352,906

BLISTER RESISTANT CALCIUM CARBONATE FILLED POLYISOCYANURATE RESIN MOLDING COMPOSITIONS

Weldon N. Reed, Avondale, Pa., and Thomas J. Galvin, Wilmington, Del., assignors to ICI Americas Inc., Wilmington, Del.

Filed Aug. 6, 1981, Ser. No. 290,524

Int. Cl.³ C08G *18/04;* **C08L** *75/04;* **C08K** *3/26*

U.S. Cl. 524—426 **10 Claims**

1. A resin blend useful in preparing blister resistent fully cured articles when heated at temperatures of 175–205° C. which comprises a polyethylenically unsaturated polyisocyanurate polymer resin, an ethylenically unsaturated monomer, a polyurethane thickener, 30–80 percent by weight of a powdered calcium carbonate filler and from 0.05–2.0 percent based upon the weight of the calcium carbonate in the blend of a polybutadiene telomer/maleic anhydride addition product formed by copolymerizing said telomer having a molecular weight in the range of 500–4000 with 5–50 parts by weight of maleic anhydride per 100 parts telomer.

4,352,907

POLYETHYLENETEREPHTHALATE TERNARY BLENDS

Chung J. Lee, Sheboygan, Wis., assignor to Plastics Engineering Company, Sheboygan, Wis.

Filed Feb. 17, 1981, Ser. No. 234,860

Int. Cl.³ C08L *67/02;* **C08K** *3/40*

U.S. Cl. 524—537 **12 Claims**

1. A polyethylene terephthalate blend having improved toughness in products molded therefrom, comprising a ternary blend comprising:

a. 30–95 parts by weight of polyethylene terephthalate having an intrinsic viscosity of 0.7–1.0;

b. 1–30 parts by weight of a polycarbonate of a 4,4′-dihydroxy-di(mononuclear aryl)-A compound, wherein the aryl is phenyl, tolyl, xylyl, ethylphenyl or isopropylphe-

nyl and the A radical is —CH_2, —C_2H_4—, —C_3H_6—, —C_4H_8—, —S— or —SO_2—, said polycarbonate having an intrinsic viscosity of 0.45–0.75; and

c. 2.5–10 parts by weight of a copolyester of terephthalic acid with 10–90 mole percent of ethylene glycol and 90–10 mole percent of cyclohexane-1,4-dimethanol;

the combined weight of said a, b and c totaling 100 parts by weight.

4,352,908

BLENDS OF POLYSTRENE OR POLY (P-METHYLSTYRENE) AND P-METHYLSTYRENE-DIENE-STYRENE BLOCK COPOLYMERS

James G. Murray, East Brunswick, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 30, 1981, Ser. No. 335,779

Int. Cl.³ C08L *53/02, 25/06*

U.S. Cl. 525—98 **9 Claims**

1. A blend comprising at least one polymer selected from the group consisting of poly(p-methylstyrene), polystyrene, and copolymers of styrene and p-methylstyrene; and an A-B-A′ p-methylstyrene-conjugated diene-styrene block copolymer containing, by weight of the block copolymer, about 5–40% p-methylstyrene, about 5–40% styrene, and about 20–80% conjugated diene.

4,352,909

PROCESS FOR THE BROMINATION OF POLYSTYRENES

Henry J. Barda, East Brunswick, N.J., and Sandra L. Gray, Reynoldsburg, Ohio, assignors to Ferro Corporation, Cleveland, Ohio

Filed Aug. 20, 1980, Ser. No. 179,913

Int. Cl.³ C08F *8/20, 8/22*

U.S. Cl. 525—157 **6 Claims**

1. A process for producing an essentially trihalogenated polystyrene product useful as a flame retardant additive, comprising the following steps:

a. dissolving polystyrene having a molecular weight in the range of from about 50,000 to about 750,000, as determined by gel permeation chromatography, in a chlorinated hydrocarbon solvent, at a concentration of from about 5% to about 15% by weight of said polystyrene based on said solvent;

b. reacting said polystyrene in said solution with a stoichiometric excess of bromine chloride to produce a tribrominated polystyrene product, under substantially anhydrous conditions at less than 0.02% by weight of H_2O, based on said solvent, and at a temperature in the range of from about 20° C. to about 50° C., in the presence of a catalytic amount of a Lewis acid of a metal chloride salt having a Lewis acid catalyst artivity substantially equivalent to that of antimony trichloride for a sufficient period of time to permit the reaction to produce a tribrominated polystyrene product.

4,352,910

VINYL CHLORIDE RESIN COMPOSITION WITH MULTI-STAGE IMPACT MODIFIER

Takayuki Katto, and Zenya Shiiki, both of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 20, 1981, Ser. No. 313,198

Claims priority, application Japan, Oct. 23, 1980, 55-148729

Int. Cl.³ C08L *51/04, 27/06*

U.S. Cl. 525—83 **13 Claims**

1. A vinyl chloride resin composition with improved impact strength and anti-stress-whitening property comprising:

60 to 97% of a vinyl chloride resin; and

3 to 40% of an impact modifier copolymer comprising:

(1) 10 to 60 parts of a core polymer comprising 5 to 49% of a conjugated diene, 41 to 95% of a monoethylenically unsaturated monomer selected from the group consisting of aromatic vinyl monomers and mixtures thereof with alkyl acrylates or alkyl methacrylates, and 0 to 10% of a crosslinking agent,

(2) 20 to 75 parts of an inner layer polymer formed on the core polymer and comprising 60% or more conjugated diene, 0 to 5% of a crosslinking agent, and a remainder of a monoethylenically unsaturated monomer selected from the group consisting of aromatic vinyl monomers and mixtures thereof with alkyl acrylates or alkyl methacrylates, and

(3) 15 to 50 parts of an outer layer polymer formed on the inner layer polymer and comprising 0 to 10% of a crosslinking agent and a remainder of a monomer mixture selected from mixtures of an alkyl acrylate and an aromatic vinyl monomer and mixtures of an alkyl methacrylate, an aromatic vinyl monomer and an unsaturated nitrile,

the sum of the quantities of the polymers (1), (2) and (3) amounting to 100 parts,

all quantities expressed in percentages and parts being by weight.

4,352,911

SULFURIZED/AMINATED MIXTURE OF ETHYLENE-BASED POLYOLEFIN AND POLYISOBUTYLENE

J. Ronald Spence, Bartlesville, Okla., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 196,030, Oct. 10, 1980, Pat. No. 4,320,017. This application Sep. 4, 1981, Ser. No. 299,617

Int. Cl.³ C08L *23/32, 23/36*

U.S. Cl. 525—211 **15 Claims**

1. A dispersant viscosity index improver resistant to viscosity and molecular weight increase during production, which comprises the reaction product of an amine, sulfur or a sulfur-yielding compound and a mixture of polyisobutylene and a substantially amorphous polymer comprising ethylene and at least one monomer selected from the group consisting of a $C_{3\text{-}18}$ olefin, and a $C_{4\text{-}18}$ diene.

4,352,912

CONVERSION OF ALPHA-METHYLSTYRENE-TYPE MONOMERS IN THE FORMATION OF COPOLYMERS WITH CONJUGATED DIENE MONOMERS

Floyd E. Naylor, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 192,798, Oct. 1, 1980, Pat. No. 4,302,558, which is a continuation of Ser. No. 36,267, May 4, 1979, abandoned. This application Jun. 29, 1981, Ser. No. 278,124

Int. Cl.³ C08F *297/00, 297/04*

U.S. Cl. 525—314 **10 Claims**

1. A copolymer of at least one alpha-methylstyrene-type monomer and at least one conjugated diene monomer characterized by a structure comprising at least one block of homopolymeric poly(alpha-methylstyrene-type monomer) capped with a small block from a conjugated diene monomer and at least one block of random poly(conjugated diene/alpha-methylstyrene-type monomer).

4,352,913

DIMETHYLAMINO DERIVATIVES AND THEIR USE

Helmut Zondler, Bottmingen, and Roland Moser, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

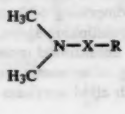
Division of Ser. No. 135,800, Mar. 31, 1980, Pat. No. 4,324,739. This application Aug. 21, 1981, Ser. No. 295,054

Int. Cl.³ C08G *59/42, 59/50*

U.S. Cl. 525—504 **3 Claims**

1. A curable mixture containing (a) a polyepoxide compound which contains on average more than one epoxy group in the

molecule and (b) a curing agent which is a dimethylamino derivative of the formula I



(I)

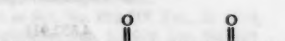
wherein

X is 1,3-propylene or ethylene or alkyl-substituted ethylene, and

R is the radical of the formulae

$(CH_3)_2N-X-OCO$ (II), R^1CO (III),

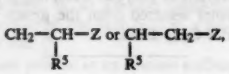
$(CH_3)_2N-X-OCYCO$ (IV), R^2R^3NCO (V),



$(CH_3)_2N-X-OCNH-Y-HNCO$ (VI),

OR^4 (VII) or $OR^{11}OXN(CH_3)_2$(XI),

wherein R^1 is alkyl, cycloalkyl, or aryl or aralkyl which is unsubstituted or substituted by halogen or C_1–C_4 alkyl, Y is a direct bond, alkylene, alkenylene, cycloalkylene or arylene, R^2 is a hydrogen atom or has the meaning of R^3, and R^3 is alkyl, cycloalkyl, or aryl or aralkyl which is unsubstituted or substituted by C_1–C_4alkyl or halogen, R^4 is alkyl, alkenyl, cycloalkyl, cycloalkylalkylene, or aryl or aralkyl which is unsubstituted or substituted by C_1–C_4 alkyl or halogen, or is



wherein R^5 is a hydrogen atom or methyl and Z is CN, CH_2NH_2 or $CH_2N(CH_3)_2$, and R^{11} is alkylene, cycloalkylene or arylene, and X is additionally neopentylene if R is the radical OR^4, or

X is ethylene, 1,3-propylene or 1,3-propylene which is substituted in the 1- or 2-position by methyl, and

R is the radical of the formulae

NR^6COR^7 (VIII), $R^8R^9NCNR^{10}$ (IX) or

$(CH_3)_2N-X-NHC-NH-(Y-NHCNH)_n$ (X),

wherein each or X and Y independently is as defined above, n is 0 or 1, R^6 is a hydrogen atom, alkyl, cycloalkyl, β-cyanoethyl or β-cyanoethyl which is substituted in the 1- or -2 position by methyl, R^7 is alkyl, alkenyl, cyclalkyl, aryl, aralkyl, alkaryl or alkaralkyl, each of R^8 and R^{10} is a hydrogen atom and R^9 is alkyl, cycloalkyl, aryl, aralkyl, alkaryl, alkaralkyl, 3-(dimethylamino) propyl, or each of R^8 and R^9 independently is C_1–C_4 alkyl or phenyl and R^{10} is a hydrogen atom or R^8 is a hydrogen atom, R^9 is alkyl, cycloalkyl, aryl, aralkyl, alkaryl or aralkaryl, and R^{10} is β-cyanoethyl or β-cyanoethyl which is substituted in the 1- or 2-position by methyl.

4,352,914

BINDER COMPOSITION FOR FOUNDRY SAND MOLDS AND CORES

Takeshi Tobinaga, Yokkaichi, Japan, assignor to Mitsubishi Petrochemical Company Limited, Tokyo, Japan

Filed Oct. 2, 1981, Ser. No. 308,236

Claims priority, application Japan, Oct. 6, 1980, 55-139530; Oct. 6, 1980, 55-139531; Jun. 16, 1981, 56-92423; Jun. 16, 1981, 56-92424

Int. Cl.³ C08G *18/64, 18/54*

U.S. Cl. 525—504 **11 Claims**

1. A binder composition for foundry sand molds or cores comprising:

(a) component (a) which is an organic polyisocyanate compound; and

(b) component (b) which is a compound selected from the group consisting of (i) a polyol compound obtained by the reaction of formaldehyde with a compound selected from bisphenols, cyclic ketones in each of which both of the carbon atoms adjacent to the carbonyl group have a total of at least two hydrogen atoms, and mixtures thereof, and (ii) a derivative of the polyol compound (i) which is a reaction product of a polyol compound (i) and a monohydric alcohol,

wherein the quantitative ratio of the component (a) to the component (b) is such that the isocyanate group of the component (a) is present in the range of 0.3 to 3 equivalents per equivalent of the hydroxyl group of the component (b) and the degree of alkoxylation of the methylol groups of the component (ii) is 10% to 60%.

4,352,915

PROCESS FOR THE POLYMERIZATION OF ETHYLENE

Kentaro Mashita, and Katsumi Hanji, both of Ibaraki, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed May 23, 1980, Ser. No. 152,610

Claims priority, application Japan, Jun. 7, 1979, 54-71872

Int. Cl.³ C08F *4/64*

U.S. Cl. 526—65 **9 Claims**

1. In a slurry polymerization process for producing an ethylene homopolymer or ethylene-α-olefin copolymer in multiple stages, in which the gas phase hydrogen concentration in each stage is different, by the use of a catalyst system comprising a transition metal compound component and an organoaluminum compound component, the improvement which comprises conducting the polymerization in a molar ratio, of gas phase hydrogen to ethylene, of 0.5 to 15 in the first stage thereby polymerizing 30 to 95% by weight of the overall polymerization amount and in the second stage in a molar ratio, of gas phase hydrogen to ethylene, not exceeding 0.2, by using as the transition metal compound component a solid catalyst component comprising a titanium compound and/or vanadium compound supported on a solid carrier obtained by the reaction of an organomagnesium compound and a halogenated aluminum compound and/or halogenated silicon compound represented by the general formula

$$R'_nAlX_{3-n}$$

and/or the general formula

$$R^2_mSiX_{4-m}$$

wherein R' and R^2 are each an alkyl, cycloalkyl, aralkyl, aryl, or alkenyl group having up to 20 carbon atoms, X is a halogen atom, and n and m are numbers defined by $0 \leqq n < 3$ and $0 \leqq m < 4$, respectively; wherein the molar ratio of said organomagnesium compound to said halogenated aluminum compound and/or halogenated silicon compound is within the range of 0.1/1 to 10/1; wherein the amount of said titanium compound and/or vanadium compound supported on said solid carrier is 0.1 to 30% by weight in terms of titanium and-

/or vanadium atom based on the total amount of the supported compound and the carrier; wherein said reaction of the organomagnesium compound with the halogenated aluminum compound and/or halogenated silicon compound is carried out at 0° to 100° C.; and, wherein said organomagnesium compound is represented by the general formulae

R^3MgX and/or $R_2{}^3Mg$

wherein R^3 is an alkyl, aralkyl, aryl, or alkenyl group having up to 20 carbon atoms.

4,352,916

USE OF HYDROPHOBICALLY MODIFIED WATER SOLUBLE POLYMERS IN SUSPENSION POLYMERIZATION

Leo M. Landoll, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Jul. 17, 1981, Ser. No. 284,271
Int. Cl.³ C08F 2/00
U.S. Cl. 526—200 **4 Claims**

1. In a process wherein at least one vinyl monomer is polymerized by dissolving a polymerization initiator in said vinyl monomer, suspending the resultant solution in water containing a suspension stabilizer and subjecting the suspension to polymerization conditions, the improvement which comprises the suspension stabilizer being selected from the class consisting of

(a) a water-soluble, nonionic cellulose ether modified with a C_6 to C_{25} alkyl radical in an amount between about 0.2% by weight and an amount sufficient to render said ether less than 1% soluble in water; and

(b) a copolymer of ethylene oxide and about 0.2 to 4% by weight of a C_6 to C_{24} alkyl epoxide.

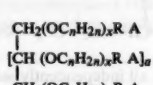
4,352,917

HYDROPHILIC COATINGS FOR TEXTILE MATERIALS

Jeffrey A. Tripp, Adrian, Mich., assignor to SWS Silicones Corporation, Adrian, Mich.

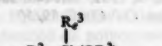
Filed Sep. 18, 1980, Ser. No. 188,210
Int. Cl.³ C08G 77/04
U.S. Cl. 528—26 **16 Claims**

1. A process for preparing silylated organic polymers which comprises reacting a polymeric organic acid containing at least one acid group per molecule which is obtained from the polymerization of an organic acid having aliphatic unsaturation with a silylated aminofunctional polyether at a temperature of from −10° C. to 200° C., in which the silylated aminofunctional polyether has the formula:



wherein R is a radical selected from the group consisting of:

R^1 is selected from the class consisting of hydrogen, a monovalent hydrocarbon radical and a silicon containing radical selected from the group consisting of:

(a)


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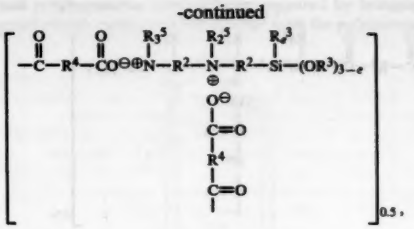
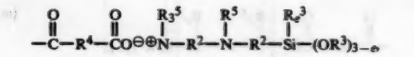
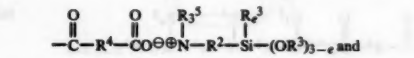
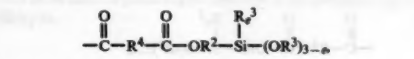
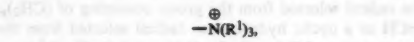
(b)


(c)


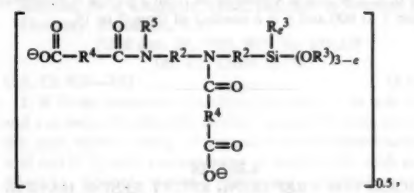
(d)


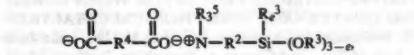
(e)


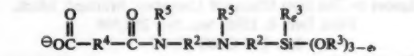
and when R is

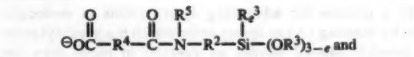


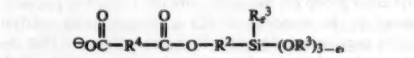
A is an anionic silicon containing radical selected from the group consisting of:

(f)


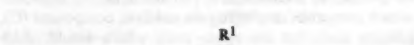
(g)


(h)


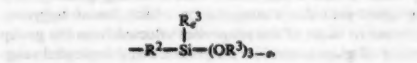
(i)


(j)


and when R is



then A is selected from the group consisting of hydrogen, a monovalent hydrocarbon radical, and a silicon containing radical selected from the group consisting of:

(k)


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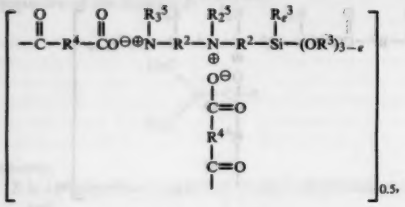
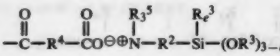
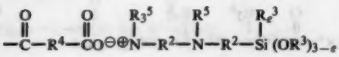


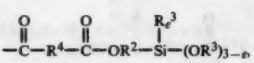
(l)



(m)



(n)



(o)

R^2 is a divalent radical, R^3 is a monovalent hydrocarbon radical having from 1 to 18 carbon atoms, R^4 is a divalent hydrocarbon radical selected from the group consisting of $(CH_2)_y$, CH=CH or a cyclic hydrocarbon radical selected from the group consisting of C_6H_4, C_6H_8, C_6H_{10} and $C_{10}H_6$, R^5 is selected from the group consisting of hydrogen and a monovalent hydrocarbon radical, with the proviso that at least one A or R^1 is a silicone containing radical, a is a number of from 0 to 4, e is 0, 1, 2 or 3, n is a number of from 2 to 4, x is a number of from 1 to 600 and y is a number of from 0 to 16.

4,352,918

PROCESS FOR PREPARING EPOXY RESINS HAVING IMPROVED PHYSICAL PROPERTIES WHEN CURED USING QUATERNARY PHOSPHONIUM CATALYSTS

Ross C. Whiteside, Jr., Angleton; Adolphus V. Gist, Lake Jackson, both of Tex., and George A. Doorakian, Bedford, Mass., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 4, 1980, Ser. No. 212,959
Int. Cl.³ C08G *59/62*
U.S. Cl. 528—89 **11 Claims**

1. In a process for advancing epoxy resins in molecular weight by reacting (A) an epoxy resin which is a glycidyl ether of a dihydric phenol having an average of more than one glycidyl ether group per molecule with (B) a dihydric phenolic compound in the presence of (C) a phosphonium catalyst employing components (A) and (B) in quantities such that the phenolic hydroxyl to epoxide equivalent ratio is that which will provide a theoretical percent epoxide of the resultant reaction product of from about 2.7 to about 14; the improvement which comprises employing the catalyst, component (C), in a quantity such that the epoxy resin which would result when subjecting a mixture of components (A), (B) and (C) to suitable reaction conditions produces an advanced epoxy resin wherein the difference obtained by subtracting the percent epoxide obtained by analysis from the theoretical percent epoxide is from about 0.5 to about 4; thereby providing an epoxy resin which when cured with a curing quantity of a curing agent provides a composition which has an improvement in one or more of the properties selected from the group consisting of glass transition temperature and increased reactivity.

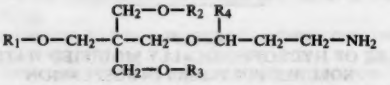
4,352,919

AMINOALKOXYPENTAERYTHRITOLS

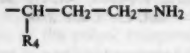
Edward W. Kluger, Pauline, and Calvin D. Welch, Spartanburg, both of S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Filed Feb. 2, 1981, Ser. No. 230,721
Int. Cl.³ C08G *59/50*
U.S. Cl. 528—111 **9 Claims**

1. Aminoalkoxypentaerythritol compounds having the following formula:



where R_1, R_2 and R_3 are independently selected from H and



where R_4 is selected from H and a lower alkyl group having from 1 to about 4 carbon atoms.

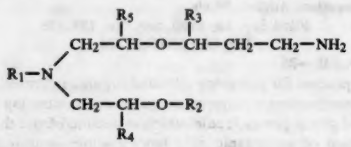
4,352,920

EPOXY RESIN COMPOSITIONS

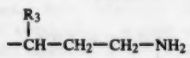
Edward W. Kluger, Pauline, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Feb. 2, 1981, Ser. No. 230,719
Int. Cl.³ C08G *59/50, 59/64*
U.S. Cl. 528—111 **6 Claims**

1. An epoxy resin composition comprising an epoxy resin and at least one epoxy resin curing agent of the formula:



wherein R_1 and R_2 are selected from H or



and R_3, R_4 or R_5 are all independently selected from H and a lower alkyl group having from 1 to about 6 carbon atoms.

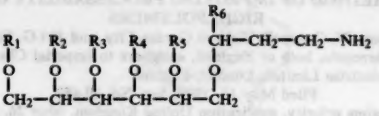
4,352,921

AMINOALKOXYHEXANES AND EPOXY RESIN COMPOSITIONS CONTAINING THEM

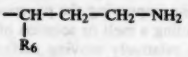
Edward W. Kluger, Pauline, and Calvin D. Welch, Spartanburg, both of S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Filed Feb. 2, 1981, Ser. No. 230,723
Int. Cl.³ C08G *59/50*
U.S. Cl. 528—111 **9 Claims**

1. Aminoalkoxyhexane compounds having the following formula:



wherein R_1, R_2, R_3, R_4, and R_5 are independently selected from H and



wherein R_6 is selected from H and a lower alkyl group having from 1 to about 4 carbon atoms.

4,352,922

METHOD OF PRODUCING AN IMPROVED POLY-(AMIDE-IMIDE) RESIN BY REACTING A PHENANTHRENE WITH FORMALDEHYDE FOLLOWED BY OXIDIZING TO PRODUCE A POLYCARBOXYLATED PRODUCT FOLLOWED BY REACTION WITH AN AROMATIC DIAMINE

Joseph G. Robinson, Winchcombe; Angela M. Carswell, Longhope, and David I. Barnes, Cheltenham, all of England, assignors to Coal Industry (Patents) Limited, London, England

Filed Mar. 3, 1981, Ser. No. 240,025

Claims priority, application United Kingdom, Mar. 19, 1980, 8009254

Int. Cl.³ C08G *69/26*

U.S. Cl. 528—232 **8 Claims**

1. An improved method of producing a poly-(amide-imide) resin comprising the steps of:

(1) reacting a phenanthrene with formaldehyde or a formaldehyde donor in the presence of an acid catalyst to give a phenanthreneformaldehyde reaction product having substantially only methylene bridges;

(2) removing from the reaction product unreacted phenanthrene;

(3) treating the reaction product with formaldehyde or a formaldehyde donor in the presence of an acid catalyst to give a high molecular weight product having substantially only methylene bridges;

(4) oxidizing the high molecular weight product to break the 9, 10 bond in the phenanthreme moieties to produce a polycarboxylated reaction product; and

(5) reacting the polycarboxylated reaction product with an aromatic diamine to produce a poly-(amide-imide) resin.

4,352,923

PROCESS FOR POLYMERIZING FORMALDEHYDE

Hisashi Kono; Kenji Terai; Masaki Hisadomi; Katumi Uemura; Sumio Ohta, and Yoshiichi Yamamoto, all of Ube, Japan, assignors to Ube Industries, Ltd., Japan

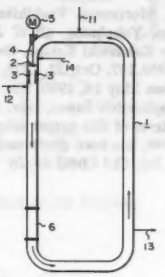
Filed Nov. 5, 1980, Ser. No. 204,353

Claims priority, application Japan, Nov. 6, 1979, 54-142828; Jun. 20, 1980, 55-82866

Int. Cl.³ C08G *2/06, 6/00*

U.S. Cl. 528—233 **23 Claims**

1. In a process for polymerizing formaldehyde wherein formaldehyde is subjected to slurry polymerization carried out in an inert organic liquid medium in the presence of a polymerization catalyst adsorbed on polyoxymethylene, the improvement comprising using a polymerization catalyst comprised of a metal chelate compound adsorbed on a polyoxymethylene, said polymerization catalyst being prepared by bringing the metal chelate compound into contact with the polyoxymethylene in an inert organic liquid medium in the presence of formaldehyde.



4,352,924

THERMOSETTING POWDER COATING COMPOSITIONS

Willis C. Wooten; Winston J. Jackson, Jr., and Herbert F. Kuhfuss, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 29, 1981, Ser. No. 278,229

Int. Cl.³ C08G *63/16*

U.S. Cl. 528—302 **12 Claims**

1. A linear saturated crystalline polyester of an acid moiety and a moiety of a dihydric alcohol, at least 50 mole percent of the acid moeity being of trans-1,4-cyclohexanedicarboxylic acid and 0–50 mole percent being of terephthalic acid, and the dihydric alcohol moieties consisting essentially of 1,4-butanediol, said polyester being further characterized as having a molecular weight of about 700–3000, a melt viscosity of about 50–3500 cps at 160° C. and a hydroxyl number of about 35–160.

4,352,925

HEAT RESISTANT COPOLYESTER ADHESIVES

Frederick D. Petke; Bobby J. Sublett, and Richard L. McConnell, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 17, 1980, Ser. No. 207,818

Int. Cl.³ C08G *63/18*

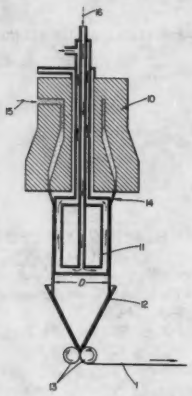
U.S. Cl. 528—309 **13 Claims**

1. A heat-resistant adhesive composition comprising a copolyester derived from a dicarboxylic acid component and a glycol component, said dicarboxylic acid component comprising at least 99 mol % terephthalic acid, and said glycol component consisting essentially of from about 30 to about 50 mol % diethylene glycol and from about 70 to about 50 mol % ethylene glycol, said polyester having an inherent viscosity of from about 0.4 to about 1.0 when measured at 25° C. using 0.25 gram of polymer per 100 ml of a solvent composed of 60 wt. % phenol and 40 wt. % tetrachloroethane.

4,352,926
BIAXIALLY DRAWN POLYHEXAMETHYLENE ADIPAMIDE FILM AND PROCESS FOR PRODUCING SAME

Yukinori Matsuoka, Moriyama; Yoshihiko Muto, Kawasaki, and Mitsuo Kohno, Yokohama, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 956,267, Oct. 31, 1978, Pat. No. 4,252,966.
This application May 14, 1980, Ser. No. 149,580
Claims priority, application Japan, Nov. 18, 1977, 52-137787
The portion of the term of this patent subsequent to Feb. 28, 1998, has been disclaimed.
Int. Cl.³ C08G *69/26*
U.S. Cl. 528—335 6 Claims



1. A process for producing a biaxially drawn polyhexamethylene adipamide film wherein molten polyhexamethylene adipamide is extruded through a circular die gap and the tubular extrudate is brought in sliding contact with the outer periphery of an inside mandrel thereby to be cooled, characterized in that polyhexamethylene adipamide having a relative viscosity (ηrel) of from 3.3 to 5.0, as measured at a temperature of 25° C. in aqueous 96% sulfuric acid, is used, and the tubular extrudate formed therefrom is cooled at a cooling rate (X° C./sec.) satisfying the following formula with respect to the relative viscosity (ηrel) of the polymer used,

$$-100\times\eta rel+1{,}200<X<-170\times\eta rel+2{,}150$$

at least in the cooling stage in which the tubular extrudate is cooled from 250° C. to 150° C.; and then, the obtained tubular film is concurrently biaxially drawn.

5. The process according to anyone of claims 1, 3 and 4 wherein the biaxially drawn film is further heat-treated under the conditions satisfying the formulae:

$$190\leqq T(°C.)<240$$

$$-78.9\cdot\log t+268\leqq T(°C.)\leqq-106.8\cdot\log t+388$$

wherein T is a heating temperature in °C. and t is a heating period in second.

6. A biaxially drawn polyhexamethylene adipamide film obtained by the process according to claim 5.

4,352,927
METHOD OF IMPROVING PROCESSABILITY OF RIGID POLYMERS

Frederic N. Cogswell, Welwyn Garden City, and Jiri G. Tomka, Harrogate, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed May 18, 1979, Ser. No. 40,452
Claims priority, application United Kingdom, May 26, 1978, 22953/78; May 26, 1978, 22954/78
Int. Cl.³ C08G *69/46, 73/10, 73/18*
U.S. Cl. 528—502 11 Claims

1. A method of fabricating a shaped article from a rigid polymer comprising improving the processability of the rigid polymer by subjecting a melt or solution of the rigid polymer to shear between relatively moving surfaces at an apparent shear rate of at least 100 sec^{-1}, wherein the rigid polymer is in a thermotropic or lyotropic state, whereby the viscosity of the melt or solution is reduced and remains reduced after the shear between the relatively moving surfaces ceases to be applied, and fabricating a shaped article from the melt or solution while the viscosity is so reduced.

4,352,928
5,6-ALKYLENEPYRIMIDINE DERIVATIVE

Hidetoshi Hiranuma; Tetsuo Sekiya; Susumu Mizogami; Motokuni Mori; Mitsuo Hanatsuka, and Toshiji Kanayama, all of Amimachi, Japan, assignors to Mitsubishi Yuka Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Jun. 16, 1980, Ser. No. 160,080
Claims priority, application Japan, Jun. 21, 1979, 77582/54
Int. Cl.³ C07D *403/04, 405/14, 413/04;* A61K *31/505*
U.S. Cl. 542—431 10 Claims

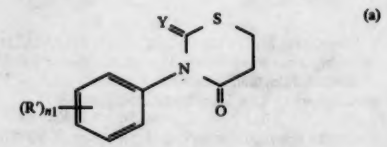
1. A compound selected from the group consisting of 2-piperazino-4-amino-5,6-tetramethylenepyrimidine; 2-[4-{3-(furan-2-yl)-acryloyl}piperazino]-4-amino-5,6-tetramethylenepyrimidine; 2-[4-(4-chlorophenyl)-piperazino]-4-amino-5,6-tetramethylenepyrimidine; 2-piperazino-4-methylamino-5,6-tetramethylenepyrimidine; 2-piperazino-4-dimethylamino-5,6-tetramethylenepyrimidine; 2-piperazino-4-morpholino-5,6-tetramethylenepyrimidine; 2-piperazino-4-amino-5,6-trimethylenepyrimidine; 2-(4-benzylpiperazino)-4-amino-5,6-trimethylenepyrimidine; and 2-piperazino-4-amino-5,6-pentamethylenepyrimidine.

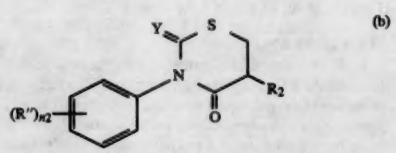
4,352,929
1,3-THIAZIN-4-ONE

David J. Anderson, Kalamazoo, and Barbara E. Loughman, Richland, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

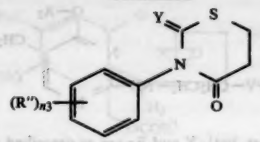
Division of Ser. No. 64,783, Aug. 8, 1979. This application May 29, 1981, Ser. No. 268,467
Int. Cl.³ C07D *279/06*
U.S. Cl. 544—54 10 Claims

1. A compound selected from the group consisting of:



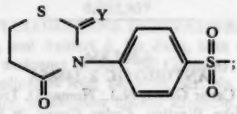


-continued



(c)

wherein R′ is alkylcarbonyl with the alkyl of from one to four carbon atoms, inclusive, or



R″ is selected from the group consisting of chlorine, fluorine, bromine and trifluoromethyl; R_2 is selected from the group consisting of acylamino with acyl of from one to four carbon atoms, inclusive; n_1 is an integer of from one to three; n_2 is an integer of from one to five; n_3 is an integer of from three to five; Y is selected from the group consisting of sulfur and oxygen.

4,352,930

BROMINE-CONTAINING 2,4-DIAMINOTRIAZINES

Leon H. Chance, New Orleans, La., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jun. 24, 1981, Ser. No. 276,768
Int. Cl.³ C07D *251/18*
U.S. Cl. 544—205 7 Claims

1. 2,4-diamino-6-carbamoylmethyl-1,3,5-triazine.

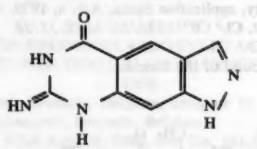
4,352,931

LIN-BENZOAMINOPURINOLS

Eckehard K. T. Cuny, Seeheim; Frieder W. Lichtenthaler, Mühetal, and Alfred R. Moser, Kassel, all of Fed. Rep. of Germany, assignors to Siegfried Aktiengesellschaft, Zofingen, Switzerland

Filed May 22, 1980, Ser. No. 152,527
Int. Cl.³ C07D *487/04*
U.S. Cl. 544—251 1 Claim

1. A compound having the formula (20)



(20)

and tautomers thereof.

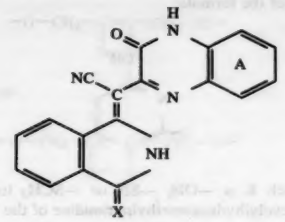
4,352,932

ISOINDOLINE COLORANTS

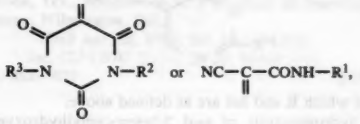
Wolfgang Lotsch, Beindersheim; Reinhard Kemper, Heidelberg, and Ernst Schefczik, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jan. 22, 1981, Ser. No. 227,279
Claims priority, application Fed. Rep. of Germany, Feb. 27, 1980, 3007299
Int. Cl.³ C09B *57/04*
U.S. Cl. 544—295 5 Claims

1. An isoindoline colorant of the general formula



wherein X is a radical of the formula



R^1 is hydrogen, C_1–C_4-alkyl, benzyl, phenyl, 1-naphthyl, thiazol-2-yl, benzothiazol-2-yl or 1,2,4-triazol-3-yl, R^2 and R^3, independently of one another, are hydrogen, C_1–C_4-alkyl, benzyl, phenyl or 1-naphthyl, and the ring A and the phenyl, naphthyl and heterocyclic radicals in R^1, R^2 and R^3 may or may not be substituted by groups which do not confer solubility either in water or in organic solvents.

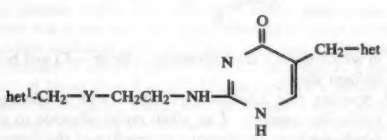
4,352,933

CHEMICAL METHODS AND INTERMEDIATES FOR PREPARING SUBSTITUTED PYRIMIDINONES

Bing L. Lam, King of Prussia, and Lendon N. Pridgen, Audubon, both of Pa., assignors to Smithkline Beckman Corporation, Philadelphia, Pa.

Filed Feb. 6, 1981, Ser. No. 232,105
Int. Cl.³ C07D *405/14*
U.S. Cl. 544—320 17 Claims

1. The method of preparing a biheterocyclylpyrimidinone of the formula:



wherein:

Y is —CH_2— or —S—;

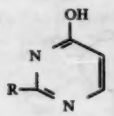
het is 2-pyridyl, 3-pyridyl, 4-pyridyl, 2-thiazolyl, 2-oxazolyl, 2-imidazole, 2-pyrimidyl or 2-pyrazyl all optionally C-substituted by methyl, ethyl, methoxy or ethoxy;

het^1 is 2- or 4-imidazolyl optionally C-substituted by C_{1-3} alkyl, halo, trifluoromethyl or hydroxymethyl, 2-pyridyl optionally C-substituted by C_{1-3} alkyl, C_{1-3} alkoxy, halo, amino or hydroxy, 2-thiazolyl, 2-guanidino-4-thiazolyl, 3-isothiazolyl optionally C-substituted by chloro or bromo, 3-(1,2,5)-thiadiazolyl optionally C-substituted by chloro or bromo, 2-(5-amino-1,3,4-thiadiazolyl, 2-furanyl optionally 5-substituted by a $R_3R_4N(CH_2)_m$- or 2-thienyl optionally 5-substituted by a $R_3R_4N(CH_2)_m$-; and

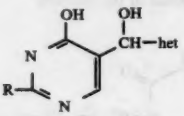
R_3 and R_4 are C_{1-3} lower alkyl or, when taken together with the nitrogen atom to which they are attached, pyrrolidino, piperidino or morpholinyl; and m is an integer of from 1-4; or a pharmaceutically acceptable acid addition salt thereof, comprising:

A. reacting in an acidic medium a compound of the formula

het-CHO in which het is as defined above with a compound of the formula:

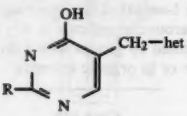


in which R is —OH, —SH or —SCH_3 to give a 5-heterocyclylhydroxymethylpyrimidine of the formula:



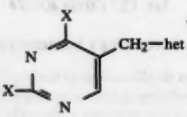
in which R and het are as defined above;

B. hydrogenolysis of said 5-heterocyclylhydroxymethylpyrimidine at the α-hydroxy position to give a 5-heterocyclylmethylpyrimidine of the formula:



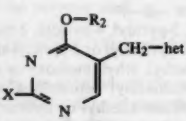
in which R is —OH and het is as defined above;

C. reacting said 5-heterocyclylmethylpyrimidine with haloesterifying agent to give a 2,4-dihalopyrimidine of the structure:



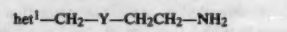
in which the X's are both either —Br or —Cl and het is as defined above.

D. reacting said 2,4-dihalopyrimidine with a substantially equimolar quantity of an alkali metal alkoxide to give a 2-halo-4-alkoxy or phenoxy pyrimidine of the formula:

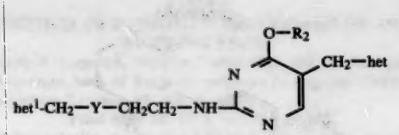


in which het and X are as defined above and R_2 is lower alkyl of 1-5 carbons, benzyl, allyl, phenyl, 2-methoxyethyl or 2,2,2-trichloroethyl;

E. condensing said 2-halo-4-alkoxy or phenoxypyrimidine with a compound of the formula:



in which het^1 is as described above and Y is —S— or —CH_2— to give a triheterocyclic compound of the formula



in which het, het^1, Y and R_2 are as described above;

F. reacting said triheterocyclic compound with a dealkylating agent to form the desired biheterocyclylpyrimidinone; and optionally forming a pharmaceutically acceptable acid addition salt thereof.

4,352,934

ANTIBIOTIC X-14885A

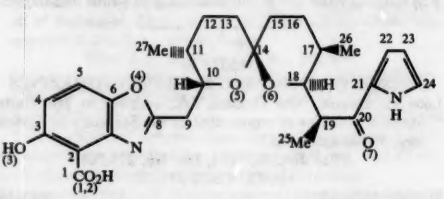
Chao-Min Liu, Cedar Grove, N.J.; Homer D. Tresner, LaFarge, Wis., and John Westley, Cedar Grove, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Oct. 14, 1981, Ser. No. 311,132

Int. Cl.³ C07D *413/02*

U.S. Cl. 548—217 **1 Claim**

1. A compound of the formula



and the pharmaceutically acceptable salts and esters thereof.

4,352,935

PROCESS FOR OBTAINING P-ACETAMIDO PHENOL α-METHYL-4(2'THIENYL-CARBONYL) PHENYL ACETATE

Eduardo Guzman Llansa, Calle siglo XX, No. 20; Pablo Arino Maestrojuan, Corcega, 89, both of Barcelona, and Enrique Melendez Andreu, Fray-Luis Amigo, 2, Zaragoza, all of Spain

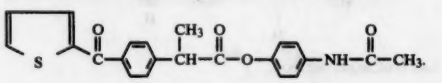
Division of Ser. No. 137,442, Apr. 4, 1980, abandoned. This application Nov. 23, 1981, Ser. No. 323,992

Claims priority, application Spain, Apr. 4, 1979, 479.300

Int. Cl.³ C07D *333/16*; A61K *31/38*

U.S. Cl. 549—72 **1 Claim**

1. The compound of the formula



4,352,936

ANTITUMOR AGENTS

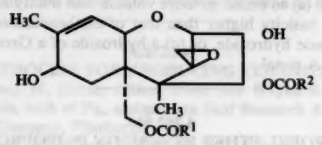
Takushi Kaneko, Fayetteville, N.Y., assignor to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 132,965, Mar. 24, 1980, abandoned, which is a division of Ser. No. 61,213, Jul. 27, 1979, Pat. No. 4,244,874. This application Jan. 16, 1981, Ser. No. 225,487

Int. Cl.³ C07D *311/78*

U.S. Cl. 549—332 **1 Claim**

1. A compound of the formula



wherein R^1 and R^2 are both methyl, with the proviso that the 8-hydroxy group must be in the β-configuration.

4,352,937

CYCLOHEXANE DERIVATIVES

Robin T. Gray, and Aaldert J. De Jong, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

. This application Aug. 14, 1978, Ser. No. 933,328

Claims priority, application United Kingdom, Aug. 9, 1976, 33050/76

Int. Cl.³ C07D *303/32*

U.S. Cl. 549—546 **2 Claims**

1. 3-(3,4-epoxy-4-methylcyclohexyl)butanal.

2. 3-(1,4-dimethyl-3,4-epoxycyclohexyl)propanal.

4,352,938

EPOXY-AZIDOFORMATE COMPOUNDS

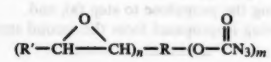
David S. Breslow, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Continuation of Ser. No. 702,637, Jul. 6, 1976, abandoned, and a continuation-in-part of Ser. No. 540,311, Jan. 10, 1975, abandoned, which is a continuation-in-part of Ser. No. 301,003, Oct. 26, 1972, abandoned, which is a division of Ser. No. 85,300, Oct. 29, 1970, abandoned, which is a division of Ser. No. 843,230, Jul. 18, 1969, Pat. No. 3,608,604. This application Oct. 19, 1979, Ser. No. 86,601

Int. Cl.³ C07D *303/16;* C07H *15/26*

U.S. Cl. 549—553 **6 Claims**

1. An epoxy-azidoformate compound having the general formula



where R is a polyvalent organic radical, R' is a radical selected from the group consisting of hydrogen, alkyl, cycloalkyl, aryl and aralkyl radicals, and n and m are integers from 1 to 100.

4,352,939

CHLOROBROMODICARBOXYLIC ACIDS AND PROCESSES FOR THEIR MANUFACTURE AND THEIR USE

Andre Paucot, Brussels, Belgium, assignor to Solvay & Cie. (Societe Anonyme), Brussels, Belgium

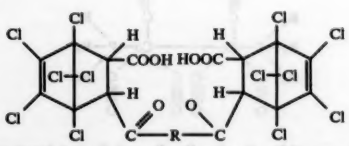
Filed Aug. 26, 1980, Ser. No. 181,354

Claims priority, application France, Aug. 27, 1979, 79 21629

Int. Cl.³ C07C *69/753*

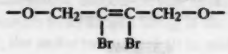
U.S. Cl. 560—120 **2 Claims**

1. Chlorobromodicarboxylic acid which corresponds to the formula



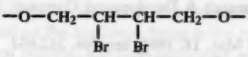
(I)

in which R represents the radical



(II)

or the radical



(III)

4,352,940

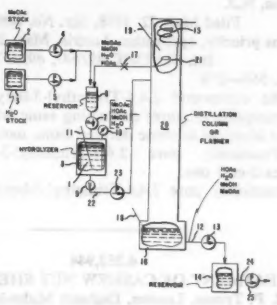
HYDROLYSIS OF METHYL ACETATE

Robert L. Adelman, Wilmington, Del., and Roy Segars, Jr., Seabrook, Tex., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 28, 1980, Ser. No. 144,534

Int. Cl.³ C07C *53/08, 27/28;* B01D *3/06*

U.S. Cl. 562—607 **2 Claims**



1. In a process for the recovery of methanol and acetic acid from methyl acetate in which methyl acetate is continually hydrolyzed and methanol and acetic acid separated from the resulting mixture of methanol, acetic acid, water and unreacted methyl acetate, the improvement which comprises feeding methyl acetate, water and optionally minor proportions of methanol and acetic acid to a liquid-filled hydrolyzer containing a cation exchange resin in the acid form and maintained at a temperature of about from 50°–90° C., inclusive at a gauge pressure of about from 0 to 240 kPa to produce a mixture of methanol, acetic acid, water, and unreacted methyl acetate, continuously distilling the mixture in a distillation column or flasher, continuously removing an overhead mixture of methyl acetate, water, methanol and, optionally, minor amounts of acetic acid from the top of the distillation column or flasher and returning the overhead mixture directly to the hydrolyzer, and withdrawing from the bottom of the distillation column or flasher a bottom mixture of acetic acid, water, methanol and optionally methyl acetate.

4,352,941

PROCESS FOR PURIFICATION OF PHENYLHYDRAZINE

Shinichi Hasegawa, Hirakata; Yuji Ueda, Izumi, and Hiroshige Tomita, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jun. 28, 1978, Ser. No. 919,992

Claims priority, application Japan, Jul. 6, 1977, 52/81422

Int. Cl.³ C07C *109/04*

U.S. Cl. 564—314 **9 Claims**

1. A process for producing phenylhydrazine of high clarity, which comprises distilling crude phenylhydrazine in the presence of a glycol selected from the group consisting of ethylene

glycol, diethylene glycol, trimethylene glycol, propylene glycol, tetramethylene glycol and butylene glycol.

4,352,942

PURIFICATION PROCESS

Anatoli Onopchenko, Monroeville; Edward T. Sabourin, Allison Park, and Charles M. Selwitz, Monroeville, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Mar. 11, 1981, Ser. No. 242,692
Int. Cl.³ C07C *49/213, 49/215*
U.S. Cl. 568—306 **16 Claims**

1. A process for reducing the amount of ortho nitro aromatic keto compounds in a mixture containing the same which comprises contacting said mixture with oleum.

4,352,943

3-BUTADIENYL-2,4,4-TRIMETHYLCYCLOHEX-2-ENONE AND DERIVATIVES THEREOF

Roman Kaiser, Uster, and Dietmar Lamparsky, Wangen-Dübendorf, both of Switzerland, assignors to Givaudan Corporation, Clifton, N.J.

Filed Mar. 22, 1978, Ser. No. 889,070
Claims priority, application Austria, Mar. 28, 1977, 2158/77
Int. Cl.³ C07C *49/647, 49/597*
U.S. Cl. 568—378 **3 Claims**

1. The compound 2,4,4-Trimethyl-3-butyl-cyclohex-2-en-1-one excepting mixtures containing same which are derived from, or identical to those derived from, natural sources.

2. Practically pure 2,4,4-Trimethyl-3-(buta-2-en-1-yl)-cyclohex-2-en-1-one.

3. Practically pure 2,4,4-Trimethyl-3-butyl-cyclohex-2-en-1-one.

4,352,944

TREATMENT OF CASHEW NUT SHELL LIQUID

John H. P. Tyman, London, England; Mahesh S. Patel, Scottsdale, Ariz., and Anthony P. Manzara, Stillwater, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 8, 1981, Ser. No. 223,418
Claims priority, application United Kingdom, Jan. 8, 1980, 8000551
Int. Cl.³ C07C *37/68*
U.S. Cl. 568—766 **9 Claims**

1. A method of treating cashew nut shell liquid to reduce the content of dihydric phenols therein comprising contacting the cashew nut shell liquid with a compound which will react with the dihydric phenol content therein to produce a reaction product which is stable under distillation conditions of high vacuum at 160° to 220° C. and which will not form a reaction product with the monohydric phenol content which is stable under the distillation conditions for a period sufficient to allow said compound to react with the dihydric phenols present in the cashew nut shell liquid and thereafter distilling the resulting mixture under high vacuum at a temperature in the range of 160° to 220° C. and collecting the distillate which comprises cashew nut shell liquid having at least 90% by weight of cardanol and a reduced content of dihydric phenols.

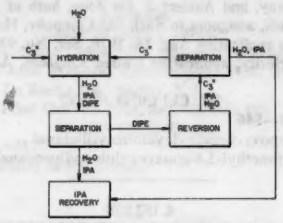
2. A method of treating cashew nut shell liquid to reduce the content of dihydric phenols therein comprising contacting the cashew nut shell liquid with a compound which will react with the dihydric phenol content therein to produce a reaction product which is stable under distillation conditions of high vacuum at 160° to 220° C. and which will not form a reaction product with the monohydric phenol content which is stable under the distillation conditions for a period sufficient to allow said compound to react with the dihydric phenols present in the cashew nut shell liquid and thereafter distilling the resulting mixture under high vacuum at a temperature in the range of 160° to 220° C. and collecting the distillate which comprises cashew nut shell liquid having at least 90% by weight of cardanol and a reduced content of dihydric phenols in which the compound with which the cashew nut shell liquid is contacted comprises (a) an amine no more volatile than n-butylamine and having a basicity higher than that of diethanolamine, (b) an organic base hydroxide, or (c) a hydroxide of a Group IA or Group IIA metal.

4,352,945

DIISOPROPYL ETHER REVERSION IN ISOPROPANOL PRODUCTION

Susan A. Bezman, Point Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Oct. 30, 1981, Ser. No. 316,579
Int. Cl.³ C07C *29/04*
U.S. Cl. 568—899 **9 Claims**



1. A process for producing isopropanol comprising:
(a) contacting water and a feedstock comprising propylene with a catalyst comprising an acid ion exchange resin in a first reaction zone under hydration conditions to produce a first stream;
(b) dividing the first stream into a second stream comprising water and isopropanol and a third stream comprising diisopropyl ether;
(c) contacting the third stream with a reversion catalyst in a second reaction zone under reversion conditions to produce a fourth stream;
(d) separating propylene from the fourth stream;
(e) recycling the propylene to step (a); and
(f) recovering isopropanol from the second stream.

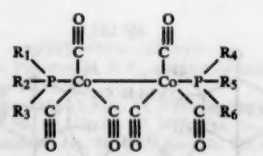
4,352,946

PROCESS FOR PRODUCING ETHANOL

Wayne R. Pretzer; Thaddeus P. Kobylinski, both of Gibsonia, and John E. Bozik, Pittsburgh, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 42,516, May 25, 1979, Pat. No. 4,239,925, which is a continuation-in-part of Ser. No. 863,743, Dec. 23, 1977, abandoned. This application May 27, 1980, Ser. No. 153,190
Int. Cl.³ C07C *29/00*
U.S. Cl. 568—902 **15 Claims**

1. A process for the homologation of methanol to ethanol which comprises introducing into a reaction zone solely methanol, hydrogen, carbon monoxide, a cobalt tricarbonyl complex of the formula:



wherein each of R_1, R_2, R_3, R_4, R_5 and R_6 is n-butyl and an iodine promoter, and then subjecting the contents of said reac-

tion zone to an elevated temperature and an elevated pressure for a time period sufficient to convert methanol to ethanol.

4,352,947

PROCESS FOR PRODUCING ETHANOL

Mohammad M. Habib, Allison Park, and Wayne R. Pretzer, Gibsonia, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Aug. 3, 1981, Ser. No. 289,406

Int. Cl.³ C07C *29/00*

U.S. Cl. 568—902 **41 Claims**

1. A process for selectively producing ethanol which comprises introducing into a reaction zone (1) methanol, (2) carbon monoxide, (3) hydrogen, (4) cobalt, (5) iodine, (6) ruthenium and (7) a ligand containing atoms selected from the group consisting of nitrogen, phosphorus and arsenic separated by a sterically constrained carbon-carbon bond, the molar ratio of carbon monoxide to hydrogen being in the range of about 1:10 to about 5:1; the molar ratio of cobalt to said ligand being in the range of about 10:1 to about 1:5; the molar ratio of cobalt to iodine being in the range of about 8:1 to about 1:6; the molar ratio of cobalt to ruthenium being in the range of about 1:4 to about 20:1; and the weight percent of combined cobalt and iodine, based on the methanol, being in the range of about 0.01 to about ten percent; and then subjecting said contents to an elevated temperature of about 150° to about 250° C. and an elevated pressure of at least about 2200 pounds per square inch for about five minutes to about five hours, sufficient to convert methanol to a product predominating in ethanol.

4,352,948

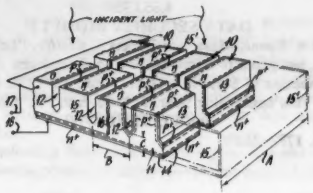
HIGH-INTENSITY SOLID-STATE SOLAR-CELL DEVICE

Roy Kaplow, Newton; Robert I. Frank, Lexington, and Joel Goodrich, Dracut, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 73,281, Sep. 7, 1979, abandoned. This application Nov. 17, 1980, Ser. No. 209,942

Int. Cl.³ H01L *31/06*

U.S. Cl. 136—249 25 Claims



1. A vertical-junction semi-conductor solar cell, comprising a body of substrate material of a first conductivity type and having spaced parallel upper and lower surfaces, the upper one of said surfaces having a plurality of laterally spaced parallel elongate grooves to a depth more than half the body thickness and therefore close to but short of the other of said surfaces, thereby defining an integrally connected series of otherwise spaced, elongate, parallel units with upstanding sidewalls at said grooves, said grooves extending fully to and therefore open at both of the marginal edge surfaces of said body, each sidewall of the grooves of said plurality comprised of an independent localized region of a second conductivity type, each localized region of second conductivity type being exclusive to the sidewalls of its particular groove and independent of the sidewalls of any other groove, whereby a corresponding plurality of independent vertical junctions characterize said body, a separate electrically conductive metal coating bonded to and fully lining both sidewalls of each of the grooves of said plurality and having ohmic contact with the second conductivity type regions of both of the sidewalls of each said groove, first output-terminal means including a first electrically conductive metal interconnect plate bonded to and extending along one of the marginal edge surfaces and having bonded ohmic contact with the full marginal-edge inercept of each of the metal coatings of the grooves of said plurality, said first output-terminal means including a second electrically conductive metal interconnect plate bonded to and extending along the other marginal edge surface and having bonded ohmic contact with the full marginal-edge intercept of each of the metal coatings of the grooves of said plurality, and second output-terminal means including an electrically conductive metal plate having ohmic contact to said body in a lower surface region of first conductivity type.

4,352,949

TRANSMISSION LINE INCLUDING SUPPORT MEANS WITH BARRIERS

Alan H. Cookson, Pittsburgh, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 29, 1979, Ser. No. 70,582

Int. Cl.³ H01B *9/06*

U.S. Cl. 174—27 10 Claims

1. A gas-insulated transmission line comprising:

an elongated outer sheath made of an electrically-conducting material;

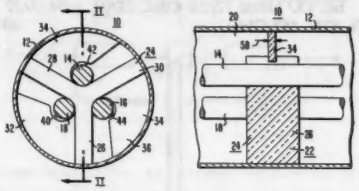
a plurality of inner conductors disposed within and extending along said outer sheath;

an insulating gas comprising sulfur hexafluoride electrically insulating said inner conductors from said outer sheath; and

support means for insulatably supporting said inner conductors in said outer sheath, said support means being made of a low dielectric constant material and comprising:

a main body portion including a plurality of legs extending to said outer sheath; and

barrier portions extending between said legs, said barrier



portions having openings therein, adjacent said main body portion, through which said inner conductors extend;

said main body portion including said plurality of legs being of a first longitudinal thickness and said barrier portions being of a second longitudinal thickness less than said first longitudinal thickness.

4,352,950

CONNECTION DEVICE FOR A SCREENED CABLE

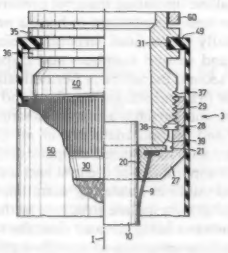
Walter Meier, Zollikon, Switzerland, assignor to Contraves AG, Zurich, Switzerland

Filed Jan. 19, 1981, Ser. No. 226,207

Claims priority, application Switzerland, Feb. 25, 1980, 1466/80

Int. Cl.³ H01R *17/00*

U.S. Cl. 174—35 C 5 Claims



1. A radiation tight connection device for a cable having a shielding meshwork fixed by clamping, comprising:

an insert member equipped with an insert cone;

a collar formed at the insert cone;

a retaining nut having a substantially conical bore;

said insert member being inserted into the conical bore of said retaining nut;

a substantially conical contact surface provided at said insert cone;

said conical bore of said retaining nut having a contact surface;

the conical contact surface of the insert cone essentially corresponding to the contact surface of the conical bore of the retaining nut; and

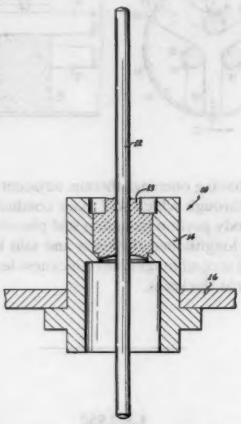
the shielding meshwork exclusively being fixedly retained between both of said contact surfaces by clamping thereof.

4,352,951

CERAMIC SEALS BETWEEN SPACED MEMBERS SUCH AS A TERMINAL PIN AND A FERRULE

James C. Kyle, Mission Viejo, Calif., assignor to Medical Components Corp., Mission Viejo, Calif.

Filed Sep. 26, 1977, Ser. No. 836,659
Int. Cl.[3] H01B 17/26; C03C 27/02, 3/04, 3/22
U.S. Cl. 174—152 GM 40 Claims



1. In combination,
a first member made from a noble metal,
a second member disposed in spaced but enveloping relationship to the first member and made from a material selected from the group consisting of stainless steel, steel alloy containing colbalt, steel alloy containing a combination of cobalt and molybdenum and steel alloy containing nickel and chromium, a ceramic and alumina, and
a polycrystalline insulating material preformed by heating at a first elevated temperature to have a partially crystalline and partially amorphous structure before application to the first and second members and disposed between the first and second members in hermetically sealed relationship to the first and second members and having a partially crystalline and partially amorphous structure and fused to the first and second members in an oxygen-rich atmosphere at a second elevated temperature, less than the first elevated temperature, of the first and second members and the polycrystalline insulating material, with the relative amount of the crystalline structure at the boundary of the second member being greater than the relative amount of the crystalline structure at positions removed from such boundary, the polycrystalline material being resistant to acids and alkalis.

23. In combination,
a first member,
a second member displaced outwardly from the first member, and
an insulating material hermetically sealing the first and second members and having a partially amorphous and partially crystalline composition and having an increased polycrystalline composition at the boundary with the second member than at positions displaced from the second member, including the following materials in the following range of percentages by weight:

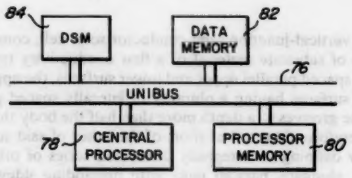
Material	Range of Relative Precentages by Weight
Lead oxide (PbO)	28–32
Silicon dioxide (SiO_2)	38–42
Boric oxide (B_2O_3)	2–4
Aluminum oxide (Al_2O_3)	1–2
Manganese oxide (MnO).	6–11

4,352,952

DATA SECURITY MODULE

Charles A. Boone, Mesa, and Robert F. Pfeifer, Phoenix, both of Ariz., assignors to Motorola Inc., Schaumburg, Ill.

Continuation of Ser. No. 914,832, Jun. 12, 1978, abandoned. This application Mar. 3, 1980, Ser. No. 126,808
Int. Cl.[3] H04L 9/00
U.S. Cl. 178—22.09 1 Claim



1. A data security module comprising:
(a) address buffer means connected to address lines of a computer for transmitting and receiving addresses from and to said computer;
(b) address decoder means connected to said address buffer means for decoding an address received by said address buffer and providing command words in response thereto;
(c) data buffer means connected to data lines of said computer for receiving and transmitting data from and to said computer;
(d) microprocessor means for providing control of data flow in and out of the data security module and for performing a portion of the data encryption alogrithm, and operating in response to said command words;
(e) memory means coupled to said microprocessor means for holding data words used in the encryption process;
(f) data security device means connected to said microprocessor means for performing a basic cipher alogrithm;
(g) interrupt and control means connected to control lines of said computer and to said microprocessor means for receiving control signals from said computer, decoding said control signals and returning appropriate control signals to said computer and signalling reception of said control signals to said microprocessor, and sending control signals to said computer in response to commands from said microprocessor.

4,352,953

MULTICHANNEL NON-DISCRETE AUDIO REPRODUCTION SYSTEM

Samuel Emmer, 6365 Stonecress Ave., Newark, Calif. 94560

Filed Sep. 11, 1978, Ser. No. 941,151
Int. Cl.[3] H04S 1/00
U.S. Cl. 179—1 G 9 Claims

1. A method for generating at least four audio output channels from first and second stereophonically related audio output signals, said output channels including a leftmost output channel, a rightmost output channel, and at least two intermediate output channels, wherein each output channel is coupled to a separate one of a plurality of speakers arranged in an ordered series such that all said speakers are in a position in front of a listener,
and including with respect to said listener a leftmost speaker

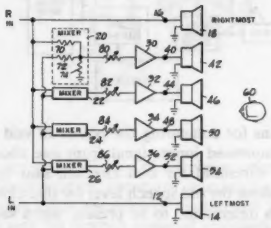
for audio output of said leftmost channel, a rightmost speaker for audio output of said rightmost channel, and at least two intermediate speakers positioned between said leftmost and said rightmost speakers for audio output of said intermediate channels, comprising the steps of:

(a) coupling said first stereophonically related signal directly out as the leftmost audio output channel to said leftmost speaker;

(b) coupling said second stereophonically related signal directly out as the rightmost audio output channel to said rightmost speaker;

(c) transferring from said first signal a predetermined amplitude portion to each said intermediate channel, the amplitude of each said amplitude portion being defined to be a lesser amount as a function of the distance that the corresponding intermediate channel is away from said leftmost speaker and nearer to said rightmost speaker;

(d) transferring from said second signal a predetermined amplitude portion to each said intermediate channel, the



amplitude of said amplitude portion being defined to be a lesser amount as a function of the distance that the corresponding intermediate channel is away from said rightmost speaker and nearer to said leftmost speaker to the same extent that said amplitude portion from said first signal is lessened in amplitude in the opposite direction from said leftmost speaker, such that at substantially the midpoint between said leftmost speaker and said rightmost speaker, the amplitude portion contributed by each said first and second signal is substantially equal;

(e) additively combining into one signal, in each said intermediate channel, the predetermined amplitude portion of said first and second signal transferred thereto; and

(f) equalizing said combined signal in each said intermediate channel such that the signal amplitude output from each said intermediate channel coupled to its respective speaker is of the same relative amplitude as the signal amplitude output from said leftmost audio channel and said rightmost audio channel.

4,352,954

ARTIFICIAL REVERBERATION APPARATUS FOR AUDIO FREQUENCY SIGNALS

Nico V. Franssen, deceased, late of Knegsel, Netherlands, and by Friedrich J. de Haan, administrator, Dommelen, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

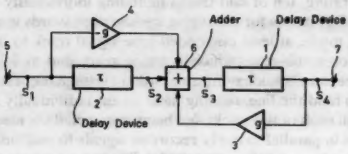
Continuation-in-part of Ser. No. 965,360, Nov. 30, 1978, abandoned. This application Jun. 2, 1980, Ser. No. 155,697

Claims priority, application Netherlands, Dec. 29, 1977, 7714502

Int. Cl.³ H04R *3/00*

U.S. Cl. 179—1 J **8 Claims**

1. An artificial reverberation apparatus for audio frequency signals comprising, an input terminal, an adder having first, second and third inputs and an output, a delay device having an input coupled to the output of the adder and provided with a feedback circuit which couples an output of the delay device to the first input of the adder, the feedback gain factor of the feedback circuit being smaller than 1, a second delay device having the same delay time as the first delay device, means coupling the input terminal to the second input of the adder via



said second delay device, and a transmission circuit coupling the input terminal to a third input of the adder, the transmission circuit having an equal but opposite transmission gain factor to that of said feedback gain factor.

4,352,955

CONTROL SIGNAL TRANSMISSION SYSTEM FOR USE IN A MOBILE RADIO COMMUNICATION SYSTEM

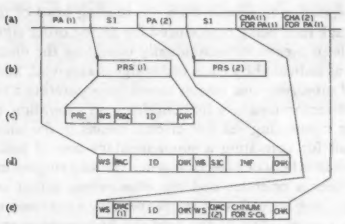
Tomokazu Kai, and Akio Saito, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jan. 30, 1980, Ser. No. 116,773

Claims priority, application Japan, Feb. 14, 1979, 54-16630

Int. Cl.³ H04Q *7/00*

U.S. Cl. 179—2 EB **2 Claims**



1. A control signal transmission system for use in mobile radio communications, said system having a plurality of mobile units each of which is identified by an individually associated identification number, at least one control center, and at least first and second common paging channel means linking each of said mobile units and said control center and using transmission via cyclically recurring time frames, said control center including first means for transmitting a pair of paging signals and system information signals to said mobile units via said first common paging channel means, at least one of said time frames carrying said system information signals following each time frame of said paging signals, and said mobile units including second means for transmitting response signals corresponding to said paging signals, to said control center via said second common paging channel means, each of said response signals including an identification number for a specific one of said mobile units.

4,352,956

MULTI-RESPONDER TELEPHONE INTERCEPT APPARATUS

George P. Gallet, 2, rue de Flandre, 35000 Reenes, France

Continuation of Ser. No. 936,232, Aug. 24, 1978, abandoned. This application May 5, 1980, Ser. No. 146,763

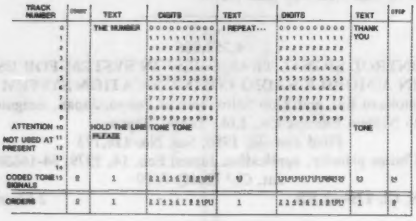
Claims priority, application France, Sep. 2, 1977, 77 27157

Int. Cl.³ H04M *1/64, 3/50*

U.S. Cl. 179—6.04 **7 Claims**

1. A telephone system having a plurality of two-wire sub-

scriber lines terminating in individually associated line circuits, at least some of said lines being equipped for interception of telephone calls and having simulated subscriber line circuit means associated therewith, a multi-responder call intercept recording machine including a multi-track recording machine incorporating, ten of said tracks including individually associated DIGIT zones for recording spoken digit words in a digit-by-digit mode, at least one coded tone signal track to indicate a zone or a sub-zone which is being read, and at least one supplementary track having a recorded message requesting the caller to hold the line, reading head means individually associated with each of the tracks and being connected via electronic switches in parallel to apply recorded signals to said simulated subscriber line circuit means, said call intercept means including a translator means having a memory for selectively connecting each simulated subscriber line circuit means to individual ones of the said reading heads, via said electronic switches,



means responsive to signals from the reading head of the signalling track then being reproduced for giving order signals to the translator means for individually operating the electronic switches as indicated by each order signal received, and each simulated subscriber line circuit means incorporating a ringing current detector means which initiates an operation of the means for connecting the line circuit, means in the simulated line circuit for activating a supplementary one of said electronic switches between the time when the said ringing current detector means operates and the time when a first of said signalling track is read, said supplementary electronic switch causing a reproduction of the hold the line message and preventing a digit line reproduction responsive to an operation of said translator means, means for thereafter opening said supplementary electronic switch and closing other electronic switches selected by the said translator means, and finally releasing the said simulated line circuit means following the reading of a zone from a signalling track.

4,352,957

SPEECH DETECTOR CIRCUIT WITH ASSOCIATED GAIN CONTROL FOR A TASI SYSTEM

Peter G. Ruether, Boulder, Colo., assignor to Storage Technology Corporation, Louisville, Colo.

Continuation-in-part of Ser. No. 131,159, Mar. 17, 1980. This application Mar. 4, 1981, Ser. No. 237,758

Int. Cl.³ H04J *6/02*

U.S. Cl. 179—15 C **8 Claims**

1. A centralized circuit for determining whether input signals from a plurality of input channels are speech, said circuit comprising:

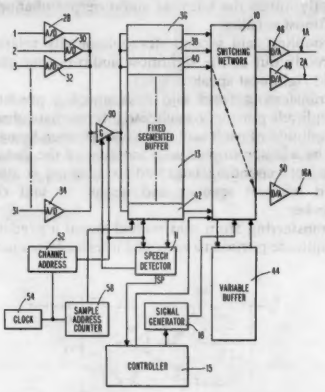
a sampling means associated with each of said input channels for continuously providing digital samples of the input signals on each of said channels;

a gain control circuit for producing gain adjusted samples from said digital samples;

a memory means for storing said gain adjusted samples from each channel, said gain adjusted samples being stored at a first rate;

a means for retrieving said gain adjusted samples from a selected channel at a second rate greater than said first rate to produce a gain adjusted, time compressed input signal for each channel;

a storage means for storing a representation of the old speech level for each channel, said gain control circuit being responsive to said old speech level; and



a first means for comparing the power of said gain adjusted, time compressed input signal from one channel against a selected threshold for that channel, said threshold being derived from the old speech level for that channel, whereby speech is determined to be present when said threshold is exceeded.

4,352,958

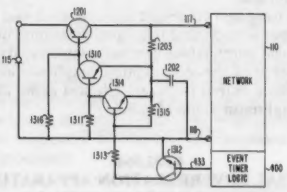
ELECTRONICALLY-SWITCHED MULTIFREQUENCY GENERATOR WITH TRANSDUCER CONTROL

Paul C. Davis, Reading, Pa.; Raymond G. Jackson, Indianapolis, Ind.; Joseph J. Nahas, Wyomissing, Pa.; Dale H. Nelson, Cumberland, Ind.; DeWitt G. Ong, Tempe, Ariz., and Brian A. Wittman, Indianapolis, Ind., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 13, 1979, Ser. No. 103,403

Int. Cl.³ H04M *1/50*

U.S. Cl. 179—84 VF **34 Claims**



1. A multifrequency generator for providing tone signaling in a telephone including a transmitter (115) and a receiver (120), the generator comprising:

a logic control means (400, 500);

tone generator means (100, 200, 600, 700, 800, 1000, 1600) for providing tone signals in response to control signals provided by the logic control means; and

a common switching circuit (1200) comprising a series of solid-state switching devices (1201, 1401), each of the devices being controlled by the logic control means characterized in that

at least one of the switching devices in the common switching circuit operates as receive amplifying means (1401) for providing gain to the receiver.

4,352,959

DEVICE FOR VISUAL DISPLAY OF TELEPHONE OPERATION SYMBOLS

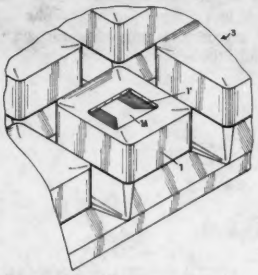
Gunter Warnecke, and Gerhard Schiller, both of Berlin, Fed. Rep. of Germany, assignors to Krone GmbH, Berlin, Fed. Rep. of Germany

Filed Nov. 20, 1980, Ser. No. 208,644

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1979, 2949449

Int. Cl.³ H04M *1/23*

U.S. Cl. 179—90 K **4 Claims**



1. A device for visual display of telephone operation symbols in telecommunication apparatus comprising a two-set installation having a free-speaking or loudspeaker option permitting dialing with the receiver replaced, said device comprising:

a key-dialing block having a plurality of keys thereon;

a liquid crystal display element incorporated in said key-dialing block in the form of one of said keys; and

an electronic circuit coupled to said display element for control thereof, said circuit also being coupled to said key-dialing block and said telephone sets;

whereby under control of said circuit, said display element shows a first symbol when one of said telephone sets is in use, and shows a second symbol when said key-dialing block is employed to dial a number with the receiver replaced, said circuit comprising:

an oscillator coupled to said display element; and

means responsive to current flow in said one telephone set for enabling said oscillator, thereby energizing said display element to provide said first symbol.

4,352,960

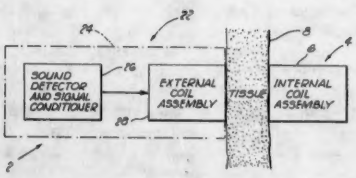
MAGNETIC TRANSCUTANEOUS MOUNT FOR EXTERNAL DEVICE OF AN ASSOCIATED IMPLANT

Kenneth J. Dormer, Edmond, and Gordon L. Richard, Minco, both of Okla., assignors to Baptist Medical Center of Oklahoma, Inc., Oklahoma City, Okla.

Filed Sep. 30, 1980, Ser. No. 192,480

Int. Cl.³ A61F *1/00, 11/00*

U.S. Cl. 179—107 BC **21 Claims**



1. A transcutaneous coupling apparatus, comprising:

a first member positioned subcutaneously;

a second member positioned supercutaneously; and

magnet means for magnetically securing said second member to said first member.

4,352,961

TRANSPARENT FLAT PANEL PIEZOELECTRIC SPEAKER

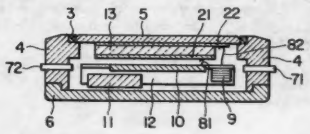
Akio Kumada, Kokubunji, and Shigeo Nakamura, Hino, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 2, 1980, Ser. No. 155,228

Claims priority, application Japan, Jun. 15, 1979, 54-74698; Apr. 25, 1980, 55-54226

Int. Cl.³ H04R *1/02, 17/00*

U.S. Cl. 179—110 A **13 Claims**



1. A transparent flat panel speaker comprising:

(a) a resonator plate having a periphery in the shape of a smooth curve or in the shape of straight lines connected by smooth curves, in either case the curve or curves forming said periphery having at least two centers of curvature;

(b) means for inducing a resonance in said resonator plate comprising:

(i) a plate of transparent piezoelectric material; and

(ii) electrodes disposed on opposite faces of said plate of piezoelectric material; and

(c) each of said resonator plate, said plate of piezoelectic material and said electrodes being transparent.

4,352,962

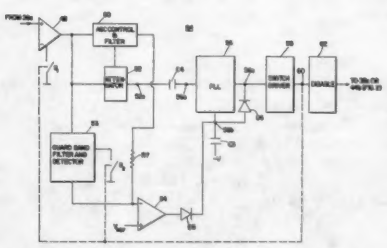
TONE RESPONSIVE DISABLING CIRCUIT

Hilary LaMothe, Shenandoah, Ga., assignor to Reliance Electric Company, Cleveland, Ohio

Filed Jun. 27, 1980, Ser. No. 163,929

Int. Cl.³ H04B *3/20*

U.S. Cl. 179—170 R **24 Claims**



1. A circuit for disabling a device connected to a transmission line, said device improving a voice frequency signal transmitted on said line, said circuit responsive to a tone signal transmitted on said line having a predetermined amplitude and a frequency falling within a predetermined frequency band of said voice frequency signal comprising:

(a) signal processing means for generating an enabling output signal when the amplitude of a first control signal exceeds the amplitude of a second control signal and a reference signal wherein said signal processing means is responsive to said signal transmitted on said transmission line for generating said first control signal having an am-

plitude which is a function of the total energy of said transmission line signal and said second control signal having an amplitude which is a function of the energy in said transmission line signal which lies in a predetermined band of frequencies which are outside of said tone signal frequency band; and

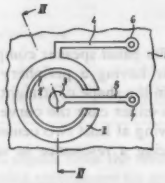
(b) tone signal detection and capture means responsive to both said transmission line signal and said enabling signal for detecting and capturing said tone signal and generating upon capture a disabling signal whereby said device is disabled.

4,352,963

LOW PROFILE MICROSWITCHES, PARTICULARLY USEFUL FOR THE COMPOSITION OF KEYBOARDS AND METHOD OF MAKING

Pietro De Filippis; Amedeo Salvatore, and Luigi Abbondandolo, all of Naples, Italy, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 5, 1980, Ser. No. 175,230
Int. Cl.³ H01H *13/70*
U.S. Cl. 200—5 A **7 Claims**



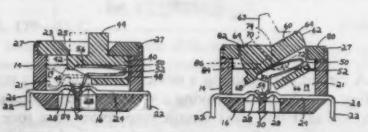
1. A low profile microswitch particularly useful for keyboards of the kind having an electrically conductive movable contact spherical cap member able to invert its sense of curvature with the application of pressure thereon, characterized in that a first generally annular contact is disposed on a generally planar surface on an insulating substrate arranged for contacting the peripheral area of said cap member; at least three protuberances are formed in the substrate extending above said generally planar surface spaced about each microswitch and adjacent thereto to laterally center the cap member in registry with the annular contact; and a second contact is disposed as a button substantially at the center of said first contact and in such a way so as to be electrically isolated from the first contact.

4,352,964

SLIDE AND ROCKER SWITCH ASSEMBLIES HAVING DOUBLE CANTILEVERED CONTACTOR

Jack A. English, Elkhart, Ind., assignor to CTS Corporation, Elkhart, Ind.

Filed Mar. 25, 1981, Ser. No. 247,409
Int. Cl.³ H01H *3/00*
U.S. Cl. 200—5 A **10 Claims**



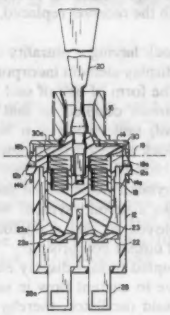
1. A miniature slide switch assembly comprising a box-like housing having a base, side walls, and a plurality of transversely extending walls forming individual chambers therein, a plurality of apertures extending between the upper and lower surfaces of said base and communicating with said chambers, a plurality of terminals secured to said base, said terminals disposed in pairs of oppositely disposed terminals with one pair in each of said chambers, each of said oppositely disposed terminals including an arcuate shaped terminal head disposed over one of said apertures and a longitudinal portion embedded in the upper surface of said base and extending outwardly of said housing, a plurality of actuators each disposed in one of said chambers and including an upwardly extending post and a longitudinal passage formed in the subsurface of said actuator, a plurality of double cantilevered contactors each comprising a reversely bent contactor arm integral with an arcuately shaped contactor head, each of said contactors having its reversely bent contactor arm disposed in a respective one of said passages to fixedly secure the contactor within a respective actuator, and a cover having a plurality of apertures therein, each of said posts projecting through a cover aperture for actuation of the respective slide switch.

4,352,965

TOGGLE SWITCH ASSEMBLY

Richard W. Sorenson, Avon, Conn., assignor to Carlingswitch, Inc., West Hartford, Conn.

Filed Sep. 29, 1980, Ser. No. 191,686
Int. Cl.³ H01H *3/00, 13/00, 19/00*
U.S. Cl. 200—6 R **10 Claims**



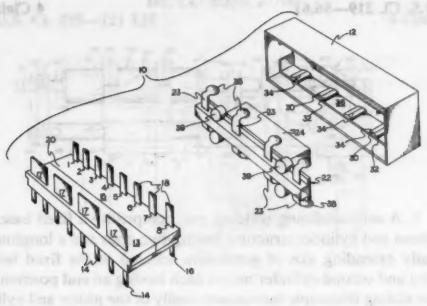
1. A toggle switch assembly comprising a housing which includes at least a case, a cover for the case, and an upwardly open bushing fitted to the cover; fixed contacts carried by the case, a movable contact element for selectively bridging certain of these fixed contacts, a plastic actuator pivotally mounted in the housing for movement about a lateral axis, at least one spring biased plunger mounted in a plunger opening of said actuator for engaging and moving said contact element in response to pivotal movement of said actuator, at least two toggles for selective assembly with said actuator, one of said toggles including a paddle shaped portion adapted to project outwardly of said housing and through said bushing to facilitate pivotal movement of said actuator, said paddle shaped toggle having a metal shank portion adapted to be received in a toggle opening defined by said actuator on assembly therewith, said shank portion having a stepped portion of circular cross section providing a permanent interference fit with a cylindrical outer portion of said toggle opening, and said shank portion having a non-circular inner cross sectional portion of reduced section size adapted to be received in a complementary shaped portion of said toggle opening to prevent rotation of said toggle in said actuator after assembly.

4,352,966

SLIDE SWITCH

Jack A. English, Elkhart; James E. Greve, South Bend; James N. Hufford, Elkhart, all of Ind., and Durward H. Priebe, Paso Rubles, Calif., assignors to CTS Corporation, Elkhart, Ind.

Filed Feb. 29, 1980, Ser. No. 125,871
Int. Cl.³ H01H *15/00*
U.S. Cl. 200—16 D 11 Claims



1. A slide switch comprising a housing having oppositely disposed walls including a base wall, first and second laterally spaced apart rows of terminals projecting from one side of the base wall, a plurality of collector plates projecting from an opposite side of the base wall and each collector plate electrically connected to a pair of terminals from the first row of terminals, a plurality of upwardly projecting contacts disposed opposite the collector plates and each contact electrically connected to a respective terminal of the second row of said terminals, a slider in slideable bearing relation with the opposite side of said base wall and selectively moveable in relation to said collector plates and contacts, resilient contact switch members molded integrally with said slider to effect a distortion-free, positive and slip-free connection therebetween, with said resilient contact switch members projecting in diverging directions from opposite sides of said slider, each of said switch members being wipably engageable with a collector plate and contact respectively, means secured to said slider and projecting from said housing for manually displacing the slider to switch positions wherein the switch members are disposed in corresponding selected circuit positions, and biasing means slideably engageable by selected ones of said switch members and separating the corresponding circuit positions to yieldably oppose the manual displacement of said slider and respective switch members which are yieldably deformed as they pass over said biasing means and thereafter positively hold said slider at a switch position.

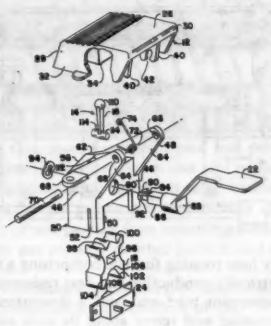
4,352,967

SWITCH ACTUATING MECHANISM

Dean H. Buchtel, Canton, Ohio, assignor to The Hoover Company, North Canton, Ohio

Filed Jul. 11, 1980, Ser. No. 167,659
Int. Cl.³ H01H *21/24*
U.S. Cl. 200—153 J 1 Claim

1. A switch actuating means including;
(a) an operator contactable member,
(b) a thrust member pivoted to said operator contactable member,
(c) a cam arranged to be contactable by said thrust member and moved to at least two positions,
(d) a switch including an actuating button,
(e) said switch button disposed so as to be engageable by said cam member for on and off actuation,
(f) means provided for bearingly mounting an axle on said operator contactable member, said means comprising aligned tabs on said operator contactable member, said tabs having aligned open ended slots for receiving said axle,
(g) outwardly extending opposite walls on said operator contactable member,
(h) an axle inserted into said open ended slots and extending through said slots for bearingly mounting said axle, and
(i) said outwardly extending opposite walls extending outwardly of said axle to closely abut the ends of said axle and maintain it in position,



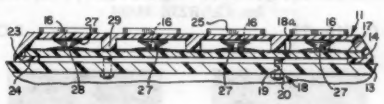
(j) a switch actuating means housing,
(k) said switch actuating means housing having a pair of upstanding tabs,
(l) aligned bores through said tabs, and
(m) said axle extending through said bores, outboard of said slots, to closely abut said ends of said axle with said outwardly extending opposite walls.

4,352,968

ELASTOMERIC BOOT FOR A KEYBOARD SUBASSEMBLY

Walter R. Pounds, Lafayette, Colo., assignor to KB Denver, Inc., Frederick, Colo.

Filed Feb. 9, 1981, Ser. No. 232,918
Int. Cl.³ H01H *13/06*
U.S. Cl. 200—302 8 Claims



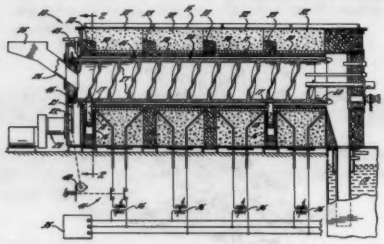
1. In a keyboard assembly having a printed circuit board with conductive paths and dome switches coacting with said paths, and a cover member for said board, wherein said board includes fastening means for mounting the assembly on a support panel, the improvement being in the cover member which comprises an elastomeric boot overlying the board and sealing said board to said support panel against the entry of contaminants, said boot having coacting button and dome actuating portions aligned with said dome switches, and sealing means disposed peripherally of the board and between the board and panel.

4,352,969

INDUCTIVELY HEATED ROTARY RETORT HEAT TREATING FURNACE

Karl A. Wulf, Rockford, Ill., assignor to Alco Standard Corporation, Valley Forge, Pa.

Filed Nov. 17, 1980, Ser. No. 207,211
Int. Cl.³ H05B 6/10
U.S. Cl. 219—10.75 6 Claims



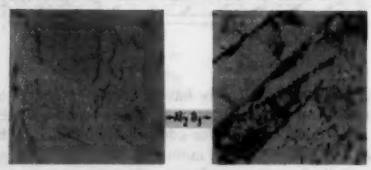
1. A rotary heat treating furnace comprising a tubular retort made of electrically conductive and heat resistant material and having an upstream inlet end and a downstream exit end, means for rotating said retort about its own axis, stationary upstream and downstream electric coils surrounding said retort and operable when excited to induce a flow of current in said retort thereby to inductively heat said retort, a source of alternating current voltage for exciting said coils, means for introducing a flow of particulate workpieces into the inlet end of said retort, a substantially helical flight secured to and extending around and along the inner wall of said retort and operable to advance the workpieces from the inlet end of the retort toward the exit end thereof in response to rotation of the retort, and means for periodically and automatically interrupting the flow of current between said voltage source and the most upstream one of said coils and for causing the frequency of the current interruptions to be directly proportional to the angular velocity of said retort whereby the magnetic field created by said one coil is periodically collapsed to prevent said workpieces from magnetically clinging to the upstream end portion of said retort.

4,352,970

WET WELDING ELECTRODES

Henri L. Mathy, Fexle-Le-Haut-Clocher, and Jacques A. De-Fourny, Herstal, both of Belgium, assignors to Centre de Recherches Metallurgiques-Centrum voor Research in de Metallurgie, Brussels, Belgium

Continuation-in-part of Ser. No. 9,946, Feb. 6, 1979, abandoned. This application Nov. 12, 1980, Ser. No. 205,944
Claims priority, application Belgium, Feb. 9, 1980, 863.821
Int. Cl.³ B23K 35/38
U.S. Cl. 219—72 8 Claims



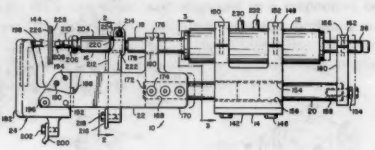
1. A wet welding electrode for manual arc welding under water, comprising a consumable steel core containing at least 95 percent by weight iron, and a flux coating containing at least one oxidizing agent, wherein the steel core contains not more than 5 percent by weight of at least one hardening constituent from the group comprising copper, aluminum oxide and aluminum nitride.

4,352,971

SELF-EQUALIZING WELDING STRUCTURE

Clyde G. Slade, 2147 E. Ten Mile Rd., Warren, Mich. 48091

Filed Oct. 6, 1980, Ser. No. 193,910
Int. Cl.³ B23K 9/12
U.S. Cl. 219—86.61 4 Claims



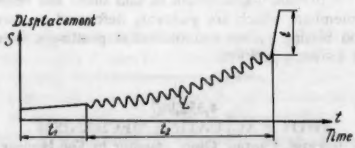
1. A self-equalizing welding gun comprising a fixed base, a piston and cylinder structure having two ends and a longitudinally extending axis of generation secured to the fixed base, first and second cylinder means each having an end positioned for sliding telescopic movement axially of the piston and cylinder structure in each of the two ends of the piston and cylinder structure, means for selectively moving the cylinder means ends into or out of the ends of the piston and cylinder structure under equalized pressure, a welding electrode secured to the first cylinder means at one end of the piston and cylinder structure, a travel rod extending parallel to the piston and cylinder structure through the fixed base, one end of which is connected to the second cylinder means, and means securing a second welding electrode to the other end of the travel rod.

4,352,972

METHOD OF RESISTANCE FLASH BUTT WELDING

Vladimir K. Lebedev, ulitsa Engelsa, 25, kv. 12; Sergei I. Kuchuk-Yatsenko, ulitsa Filatova, 1/22, kv. 47; Valery G. Krivenko, ulitsa Ordzhonikidze, 3, kv. 35; Mikhail V. Bogorsky, ulitsa Ozernaya, 30/51, kv. 120; Vitaly T. Cherednichok, Zadorozhny pereulok, 6, kv. 41; Anatoly A. Toldin, prospekt Nauki, 142/1, kv. 34, and Vasily A. Sakharnov, ulitsa Solomenskaya, 41, kv. 93, all of Kiev, U.S.S.R.

Filed Jul. 7, 1980, Ser. No. 166,326
Int. Cl.³ B23K 11/04
U.S. Cl. 219—100 5 Claims



1. A method of resistance flash butt welding workpieces, said method comprising the steps of:

preheating the workpieces;

continuously, during said preheating step, moving the workpieces being welded toward each other without oscillation, thereby fusing them;

simultaneously measuring at least one variable selected from a group of variables comprising fusion time, fusion current, power consumed, and length of the fused portion;

imparting oscillations along the direction of the movement of at least one of the workpieces after said at least one variable has reached a preselected value which corresponds to heating of the contact region to 650° to 800° C.; and

upsettting the workpieces.

4,352,973

MACHINE FOR SIMULTANEOUSLY TURNING AND LASER ENGRAVING PRINTING CYLINDERS

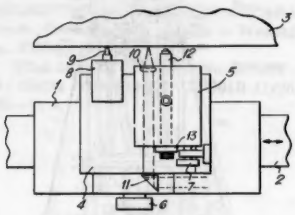
Bryan B. Chase, Layer-de-la-Haye, England, assignor to Crosfield Electronics Limited, London, England

Filed Feb. 19, 1980, Ser. No. 122,893

Claims priority, application United Kingdom, Feb. 23, 1979, 7906596

Int. Cl.³ B23K *27/00*

U.S. Cl. 219—121 LH 4 Claims



1. In a laser engraving machine for engraving cylindrical intaglio printing members including means for supporting and rotating a cylindrical printing member, a slide-way extending parallel to the axis of rotation of said printing member, a traversing carriage mounted for movement along said slide-way, and a primary sliding carriage mounted on said traversing carriage for movement in a direction transverse to said slide-way, said primary carriage carrying a laser engraving head, the improvement wherein a secondary sliding carriage is mounted on said primary sliding carriage for movement transverse to said slide-way, and wherein said primary and said secondary sliding carriages carry a turning tool holder and said laser engraving head whereby the relationship of said laser engraving head to said turning tool holder and hence to a turned surface of said printing member is set by movement of said secondary sliding carriage relative to said primary sliding carriage and then, thereafter, both said primary and said secondary sliding carriages are moved together as a single unit to turn and engrave said printing member simultaneously on a single pass of said traversing carriage.

4,352,974

PLASMA ETCHER HAVING ISOTROPIC SUBCHAMBER WITH GAS OUTLET FOR PRODUCING UNIFORM ETCHING

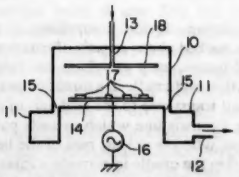
Tatsumi Mizutani, Kokubunji; Norio Kanai, Kodaira; Kunio Harada, Hachioji; Hideo Komatsu, Hinodemachi, and Shinya Iida, Tama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 29, 1980, Ser. No. 173,364

Claims priority, application Japan, Aug. 1, 1979, 54-97280

Int. Cl.³ B23K *9/00*; C23F *1/02*

U.S. Cl. 219—121 PD 23 Claims



1. In an etcher for etching surfaces of articles with a gaseous discharge plasma generated within an etching chamber provided with a plurality of electrodes, a plasma etcher comprising

(i) an etching chamber containing at least a pair of electrodes, one of said electrodes being arranged to support thereon articles to be etched;

(ii) means defining a gas inlet which serves to introduce a gas directly into said etching chamber;

(iii) means for effecting an isotropic emission of gas from said etching chamber including a joint part forming a restricted passage which is isotropically disposed outside an outer fringe of the electrode for supporting said articles and into and through which said gas can flow from said etching chamber;

(iv) an isotropically-configured subchamber which is coupled with said etching chamber through said joint part and which has a capacity as well as a fluid conductance greater than that of said joint part, said subchamber having an annular configuration and said passage formed by said joint part being restricted to an extent necessary to restrain the gas pressure in said etching chamber in the vicinity of said passage from becoming substantially lower than the gas pressure in other parts of said etching chamber; and

(v) means defining a gas outlet provided in said subchamber for accommodating the outflow of gas.

4,352,975

PIPE WELDING APPARATUS

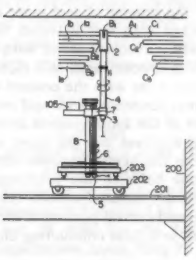
Tugio Oyamada; Kenichi Suzuki; Toshikazu Kishi, and Eizo Shibato, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 22, 1980, Ser. No. 218,682

Claims priority, application Japan, Dec. 26, 1979, 54-168283

Int. Cl.³ B23K *9/225*

U.S. Cl. 219—125.11 7 Claims

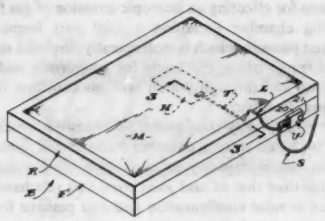


1. A pipe welding apparatus comprising: a welding unit including a first clamping means adapted to clamp an already-laid pipe, a second clamping means adapted to clamp a new pipe piece which is to be welded between sections of said already-laid pipe, a moving means for moving said second clamping means in the direction of longitudinal axis of said already-laid pipe, in a direction parallel to a vertical plane containing said longitudinal axis and a horizontal direction perpendicular to said vertical plane, and welding means attached to said first clamping means and adapted to move along the periphery of said already-laid pipe clamped by said first clamping means; and a manipulator mounting said welding unit.

4,352,976
TEMPERATURE CONTROLLED HEATER

James P. McMullan, 12300 Monarch St., Garden Grove, Calif. 92641

Filed Sep. 15, 1980, Ser. No. 186,975
Int. Cl.³ H05B 3/00
U.S. Cl. 219—217 8 Claims



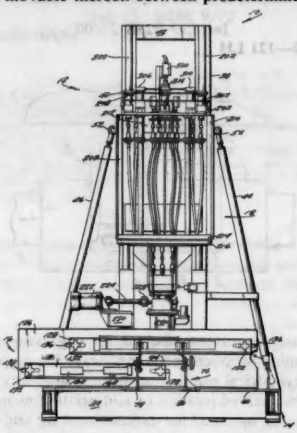
1. In combination, a water bed structure comprising a flat horizontal mattress supporting platform, a water filled bladder type flotation mattress with top, bottom and side walls positioned above the platform with its bottom wall opposing said platform and a retainer projecting upwardly from the platform and occurring about the mattress in supported engagement with the side walls thereof; and a heater system to heat and maintain the mattress at a set operating temperature including a flat, horizontal heater with an elongate electric resistance element arranged between and in heat conducting contact with the platform and bottom wall of the mattress and spaced inward from the sides thereof; a control unit for the heater at the exterior of the bed structure and including a switching circuit connected with an electric power supply by an elongate service cord and controlled by a remote temperature sensing device in heat transfer relationship with the mattress to start and stop the flow of current through the heater when the temperature of the mattress is below and when that temperature reaches the set operating temperature, an elongate flexible electrical loom having inner and outer end portions and including an outer jacket, a pair of jacketed power lines coextensive with the loom and a pair of current conductors coextensive with the outer end portion of the loom, a thermo-responsive temperature sensing device within a central portion of the loom defined by the joinder of said inner and outer end portions and connected with and between the conductors, the inner end portion of the loom is joined with the heater with the ends of said lines connected with said element, the outer end portion of the loom joins with the control unit with said lines and said conductors connected with said switching circuit, the outer end portion of the loom extends from the unit between the platform and mattress and the inner end portion of the loom extends from the heater between the platform and the mattress to a zone between the platform and the mattress which is in thermally isolated spaced relationship from the heater and where said central portion of the loom in which the device is arranged is in heat conducting engagement with the mattress.

4,352,977
WELDING APPARATUS AND METHOD

James S. Hardigg; Joseph C. Strzegowski, Jr., both of Conway; Asial L. Burgess, Jr., Ludlow, and David B. Neal, Northampton, all of Mass., assignors to Hardigg Industries, Inc., South Deerfield, Mass.

Filed Feb. 8, 1980, Ser. No. 119,972
Int. Cl.³ B65B 51/10
U.S. Cl. 219—243 30 Claims

30. Welding apparatus for welding plastic covers onto plastic containers positioned at a welding station within said welding apparatus comprising: a main frame for supporting the apparatus, means defining a work zone having loading, welding, and unload stations; means for moving containers successively from said loading station to said welding station and following welding to said unload station, welding means positioned above said welding station for controlling the relationship between said cover and container during welding and for forming a welded joint, said welding means including a welding frame slidably mounted to said main frame so as to be vertically movable thereon between predetermined positions,

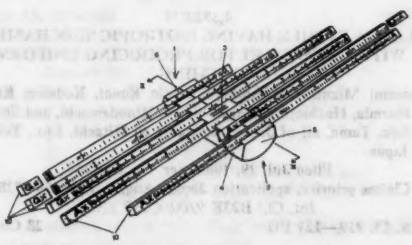


means defining a plurality of movably mounted independently controllable heating and clamping assemblies so as to be at least horizontally movable on said welding frame, each of said heating assemblies being vertically and pivotally movable and each of said clamping assemblies being pivotally movable, drive means for operating said apparatus, and control means for actuating said drive means in a predetermined sequence.

4,352,978
ANALOG BALANCE

James Chappell, P.O. Box 783, Nelson, New Zealand

Filed Oct. 5, 1981, Ser. No. 308,781
Int. Cl.³ G06G 1/02
U.S. Cl. 235—70 R 6 Claims



1. A calculating device comprising a rockable cradle adapted to be rocked about an axis of rotation and to support a plurality of beams, each of which has longitudinal sliding movement within said cradle in a direction parallel to the other said beams, and transverse to the said axis of rotation; the said cradle having a cursor line which extends parallel to the said axis of rotation; wherein at least two of the beams are slidable separately within the cradle to provide a rotating torque about the axis of rotation of the said cradle, said rotating torque being dependent upon the combined out-of-balance weight of the beams in relation to the said cursor line, and wherein at least one further beam is longitudinally slidable within the cradle to a position where it may impart a further rotating torque about

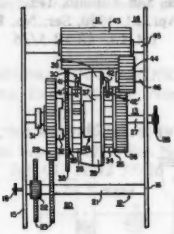
the axis of rotation of the said cradle, said further rotating torque being antiphase to the combined rotating torque of the said two beams.

4,352,979

UNIDIRECTIONAL REGISTER APPARATUS

Gene C. Knecht, Durham, N.C., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 22, 1980, Ser. No. 219,096
Int. Cl.³ G06M *1/00*; F16H *5/52*; G01R *11/16*, *11/24*
U.S. Cl. 235—91 A 5 Claims



1. A unidirectional register apparatus for maintaining true totalizing registration comprising:

a dial register assembly including a front plate, a back plate, a gear train and a plurality of dial indicators, said gear train being carried for rotation between said front plate and said back plate and coupling said dial indicators adjacent said front plate;

a ratchet assembly including a drive shaft, a rotatable input means carried about on said shaft with the rotations thereof being totalized by said dial register assembly and a rotatable output means mounted on said shaft in driving engagement with said gear train of said dial register assembly, said ratchet assembly further including a drive member mounted on said drive shaft in driving engagement with said rotatable input means and first and second driven members mounted on said drive shaft on opposite sides of said drive member, each of said first and second driven members having ratchet teeth disposed at the periphery thereof with said first driven member being in driving engagement with said rotatable output means, said ratchet assembly still further including a pawl member pivotally mounted on the periphery of said drive member having first and second diverging wire segments, each of said first and second wire segments including an end portion disposed on opposite sides of said drive shaft for mutually alternate released and engaged relationships with the ratchet teeth of said first and second driven members respectively in response to the opposite directions of rotation of said drive member where upon rotation of said drive member in a first direction effects the ratchet teeth engagement of said first wire segment with said first driven member for driving said rotatable output means in a true registering direction; and

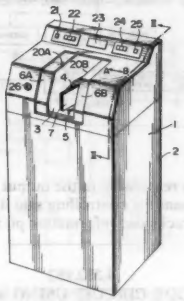
means transferring rotation from said second driven member to said rotatable output means for rotation in said true registering direction when rotation of said drive member is in a second and opposite direction that effects ratchet teeth engagement of said second wire segment with said second driven member.

4,352,980

PAPER SHEET COUNTING MACHINE PROVIDED WITH SAFETY DEVICE

Eikoh Hibari, Tokyo, Japan, assignor to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Apr. 17, 1980, Ser. No. 140,974
Claims priority, application Japan, Apr. 20, 1979, 54/48595
Int. Cl.³ G06M *9/02*
U.S. Cl. 235—92 SB 9 Claims



1. A paper sheet counting machine comprising:

a paper sheet counting mechanism including a holder for receiving a bundle of paper sheets, suction cylinders for turning over the paper sheets one by one, and a counting circuit for counting the number of paper sheets turned over by the suction cylinders;

a pair of double leaf type sound-proof covers made movable between an open position for providing easy access to said holder and a closed position at which said sound-proof covers extend above the section containing said paper sheet counting mechanism;

obstacle detecting means for detecting an obstacle which hinders the normal closing operation of said sound-proof covers to generate a signal;

a motor for closing said sound-proof covers after said holder receives said paper sheets and for opening the covers after the completion of the counting operation; and

control means for controlling to actuate or stop said motor and including means for receiving said signal from said obstacle detecting means to stop said motor in response to said signal.

4,352,981

PHOTOELECTRIC FOCUS AND TRACKING APPARATUS

Toshio Sugiyama, Toyokawa, and Takeshi Maeda, Kokubunji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 29, 1980, Ser. No. 144,920
Claims priority, application Japan, May 9, 1979, 54-55729
Int. Cl.³ G01J *1/20*
U.S. Cl. 250—201 14 Claims

1. A light beam position control apparatus comprising:

means for radiating a light beam onto a rotatable recording medium carrying trains of information pits on tracks on the recording medium to produce a modulated light beam in accordance with the presence and absence of information pits;

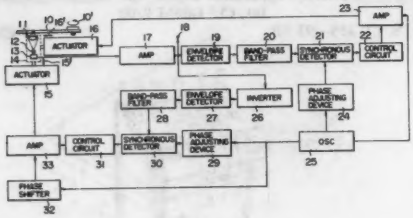
wobbling means for oscillating said radiating means so that said light beam is oscillated periodically in a direction transverse to the tracks carrying the information pit trains;

light detecting means for detecting the intensity of said modulated light beam;

envelope detector means for detecting only that portion of the envelope of the output of said light detecting means

which portion corresponds to the presence of information pits;

means for effecting synchronous detection of the output of said envelope detector means with a signal having a phase identical with that of the oscillation of said light beam; and



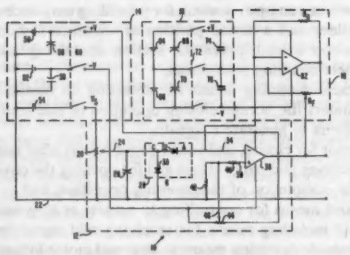
tracking means responsive to the output of said synchronous detection means for controlling said light beam so that the light beam tracks said information pit trains on said tracks.

4,352,982

PHOTODIODE CIRCUIT USING A LOW NOISE ARTIFICIAL LOAD RESISTOR

Robert L. Forward, Oxnard, and Gary D. Thurmond, Thousand Oaks, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Aug. 21, 1980, Ser. No. 180,078
Int. Cl.³ H01J *40/14*
U.S. Cl. 250—214 A **1 Claim**



1. An improved photodiode circuit using a low noise artificial load resistor, said circuit comprising:

power supply means;

a first operational amplifier having first and second input terminals;

a photodiode connected between said first input terminal of said first operational amplifier and said power supply means;

variable resistive means connected between said second input terminal of said first operational amplifier and said power supply means; and

a two-terminal network connected between the output terminal and said first input terminal of said first operational amplifier, having an equivalent resistance R_{eq} and comprising:

a second operational amplifier with first and second input terminals and an output terminal, said first input terminal of said second amplifier being connected to said first input terminal of said amplifier;

a first resistor R_D connected between said first input terminal and said output terminal of said second amplifier;

a second resistor R_F having a variable resistance terminal and first and second fixed resistance terminals, said first fixed resistance terminal being connected to said second input terminal of said second operational amplifier and said power supply means, and said second fixed resistance terminal connected to said output terminal of said second operational amplifier and said variable resistance terminal being connected to the output terminal of said first amplifier which is also the output of said photodiode circuit;

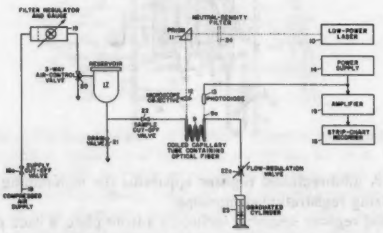
whereby said variable resistor R_F may be adjusted to change R_{eq} and to make the signal to noise ratio of said photodiode circuit substantially independent of the value of R_{eq}.

4,352,983

METHOD AND APPARATUS FOR MEASURING CONCENTRATION OF SUSPENDED OILS IN WATER

Howard S. Silvus, Jr.; Francis M. Newman, Jr., and Robert K. Swanson, all of San Antonio, Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Filed Apr. 21, 1980, Ser. No. 141,768
Int. Cl.³ G02B *5/16*
U.S. Cl. 250—227 **18 Claims**



1. A method of quantitatively measuring the concentration of suspended oils in water comprising the following steps:

passing light through an unclad optical fiber;

treating said unclad optical fiber with hydrocarbon groups that are chemically attached to a surface of said unclad optical fiber by interatomic bonding to produce a surface which adsorbs very small quantities of said suspended oils and holds said suspended coils on said surface of said unclad optical fiber;

contacting said unclad optical fiber with an oil-in-water suspension;

detecting the light transmitted through the unclad optical fiber; and

measuring the intensity of transmitted light, said transmitted light intensity being functionally related to the concentration of oils in suspension in water.

4,352,984

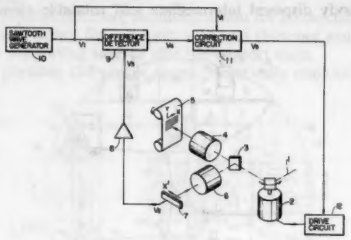
LIGHT BEAM SCANNING DEVICE

Yuji Ohara, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 13, 1980, Ser. No. 159,276
Claims priority, application Japan, Jun. 15, 1979, 54/76164
Int. Cl.³ H01J *3/14*
U.S. Cl. 250—234 **6 Claims**

1. A light beam scanning device comprising: a light beam comprised of a main laser beam and a reference laser beam having a different wavelength from that of said main laser beam, said main laser beam and said reference laser beam being projected along a common path; means for scanning said light beam over a surface; position detecting means responsive to said reference laser beam for detecting a position of said light

beam over said surface to be scanned; and feedback loop means for controlling said optical deflector in response to a signal



outputted by said position detecting means to cause said light beam to scan said surface to be scanned at a constant

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4,352,985

SCANNING ION MICROSCOPE

Frederick W. Martin, Colebrook Rd., North Stratford, N.H. 03590

Continuation of Ser. No. 431,745, Jan. 8, 1974, abandoned. This application Sep. 18, 1979, Ser. No. 76,573

Int. Cl.³ H01J *37/26*

U.S. Cl. 250—306 **8 Claims**

1. A scanning ion microscope comprising an accelerator of ions which are more massive than helium; a series of electromagnetic ion-optical lenses comprising one or more stages of quadrupole lens doublets and suitable deflection means, which both direct the ions to a predetermined position on the specimen and focus the ions onto a microscopically small area of the specimen, thereby forming a directable, focused ion beam; a detector, such as a semiconductor detector or an electron multiplier, which detector is sensitive to the occurrence and to the time of occurrence of emissions consisting of individual X rays, individual soft X rays, or individual Auger electrons produced by the interaction of the positive ions of the beam with individual atoms in the specimen; and electronic means of sweeping the focused ion beam in a pattern across the specimen while recording (or displaying) the number of emissions occurring when the ion beam is at each point in the pattern.

4,352,986

TOMOGRAPHIC APPARATUS FOR THE PRODUCTION OF TRANSVERSE LAYER IMAGES

Manfred Pfeiler, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

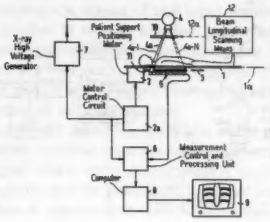
Filed Jun. 11, 1980, Ser. No. 158,627

Claims priority, application Fed. Rep. of Germany, Aug. 8, 1979, 2932182

Int. Cl.³ A61B *6/00*

U.S. Cl. 378—14 **3 Claims**

1. Tomographic apparatus for the production of transverse layer images of a radiography subject, comprising a patient support, a radiation measuring arrangement having a radiation source which generates a beam of rays which is fan-shaped in the layer plane, penetrating the radiography subject, whose cross sectional extent perpendicular to the layer plane is equal to the layer thickness, and a radiation receiver comprising a series of detector means, the series extending transversely to the longitudinal axis of the support so as to determine the radiation intensity at successive transversely offset points behind the subject, a rotating device for the measuring arrangement for rotation about an axis parallel to the longitudinal axis of the patient support, and a measured value converter for the conversion of the signals supplied by the radiation receiver into a tomographic image, means for the scanning of several parallel transverse layers and for the calculation and reproduction of an x-ray shadow image, whose length corresponds to the distance between the two exterior transverse layers and whose width corresponds to the width of the radiation receiver, characterized in that said detector means (**5***a*, series



connection **5***b*) of the radiation receiver each has an extent in a longitudinal direction parallel to the longitudinal axis of the support so as to provide for the formation of the x-ray shadow image by means of line-by-line scanning of the radiation receiver with the radiation (**4***a*) issuing from the patient, in lines running perpendicularly to the longitudinal axis of the support, and characterized in that each detector means of the radiation receiver is formed as a series connection of a plurality of detector elements (**5***b*), such that the radiation receiver (**5**) is formed from a matrix of detector elements (**5***b*).

4,352,987

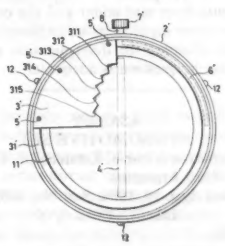
STRUCTURE OF DENTAL X-RAY APPARATUS

Kazuo Hayashi, and Mitsuhiko Hotta, both of Kyoto, Japan, assignors to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

Continuation of Ser. No. 864,538, Dec. 27, 1977, abandoned. This application Feb. 25, 1980, Ser. No. 124,532

Int. Cl.³ G03B *41/16*

U.S. Cl. 378—150 **1 Claim**



1. An X-ray generator for X-raying an entire jaw for dental purposes including an X-ray source and a vertical X-ray emitting slit comprising a screening plate provided adjacent said X-ray emitting slit, said screening plate being rotatable relative to said slit, said screening plate covering at least one end of said radiation emitting slit, said screening plate further comprising:

a fan-shaped plate spanning substantially 90°; and

a plurality of notch steps provided on an edge of said fan-shaped plate which intercepts said emitting slit, each of said steps being arranged and configured to intercept said emitting plate substantially perpendicularly when said screening plate is rotated;

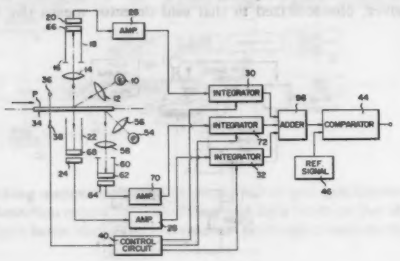
whereby a vertical height of said emitting slit can be adjusted.

4,352,988

APPARATUS FOR DISCRIMINATING SHEETS

Tsuyoshi Ishida, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 14, 1980, Ser. No. 206,894
Claims priority, application Japan, Nov. 22, 1979, 54-150603
Int. Cl.³ G01N *21/86*
U.S. Cl. 250—559 10 Claims



1. An apparatus for discriminating sheets being transferred into adequate and inadequate sheets through detection of contamination of these sheets, comprising:

a reference signal generator;

a first detecting system for detecting light transmitted through said sheets;

a second detecting system for detecting light reflected by the front surface of said sheets;

a third detecting system for detecting light reflected by the rear surface of said sheets;

a detector for detecting the passage of each of said sheets therethrough;

first to third amplifiers for amplifying the outputs of said respective first to third detecting systems;

first to third integrators for integrating the outputs of said respective first to third amplifiers;

a control circuit for supplying an integration period signal to each of said first to third integrators according to a detection signal produced from said detector;

an adder for taking the sum of the output signals from said first to third integrators; and

a comparator for comparing the output signal coupled as one of two inputs from said adder and the output signal coupled as the other input from said reference signal generator thereby effecting the determination as to whether or not the sheet in question is adequate.

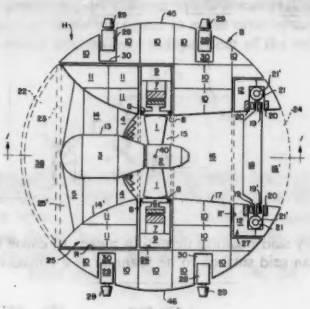
4,352,989

HYDROMOTIVE SET

Francisco J. Gutierrez Atencio, Estafeta Dr. Garcia 3101, Diamante Entre Rios, Argentina

Filed Aug. 19, 1980, Ser. No. 180,167
Int. Cl.³ E02B *9/00*
U.S. Cl. 290—53 19 Claims

10. A hydromotive assembly for placement adjacent the fluid flow passageway of a dam main body, said assembly including a normally horizontally disposed fluid flow conduit having opposite first and second open ends at extreme opposite faces of said assembly, an energy transformation unit having at least one rotatable element disposed within said conduit, means within said conduit guiding the circulation path of fluid passing through said conduit, means in said conduit displaceable to control the volume of fluid flow through said conduit, said assembly including a main body component, said guiding means and displaceable means comprising separate, independent removable sub-component bodies insertable within said main body component, said two assembly opposite faces and conduit opposite open ends configured to allow alternative positioning of either said conduit open end in coincidence with said dam fluid flow passageway, said energy transformation unit including an additional sub-component body medially disposed within said conduit, said guiding means sub-component body disposed intermediate said rotatable element and



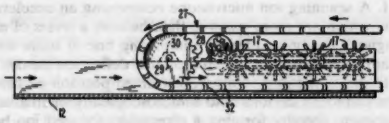
said first conduit open end, buoyancy means in said assembly operable to vary the flotation and sinking of the assembly to permit its displacement for removal, exchange, repair or the like.

4,352,990

WATER POWERED ELECTRIC GENERATOR

Ano J. Aucoin, Jr., 213 Utah St., Morgan City, La. 70380

Filed Mar. 12, 1981, Ser. No. 243,199
Int. Cl.³ F03B *7/00, 9/00*
U.S. Cl. 290—54 1 Claim



1. A water power system, comprising, in combination, a pair of spaced-apart pontoons, for being stationarily anchored in a moving body of water, a channel thus being formed between said pontoons for a portion of said water to flow therethrough, a row of rotatable paddle wheels in said channel being affixed on shafts supported between said pontoons, so that said water turns said paddle wheels, and an electric generator driven by said paddle wheels; an endless belt surrounding all said row of paddles in spaced relation thereto, by extending above and below said paddle wheels, said endless belt comprising a pair of spaced-apart, endless chains and a plurality of curved vanes secured between said chains, a lower run of said belt being in said water of said channel, so as to move said belt, a plurality of gears beyond each end of said row of paddles, said belt chains being rotated around said gears, and an electric generator driven by said gears; a plurality of angular ducts between an underside of said pontoons and a bottom wall, and a portion of said bottom wall extending under said channel being upwardly inverted V-shaped, whereby said angular ducts and V-shaped bottom wall directs water from along an outer side of said pontoon toward said belt and paddles.

4,352,991

PORTABLE LIFE SUPPORT SYSTEM

Arthur Kaufman, 100 Delford Ave., Silver Spring, Md. 20904

Filed May 4, 1981, Ser. No. 261,727
Int. Cl.³ B60R *13/00*; H02J *7/00*
U.S. Cl. 307—9 14 Claims

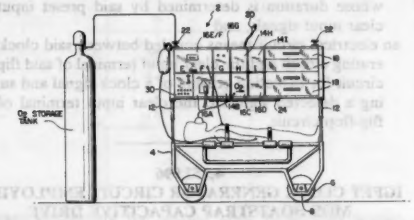
1. A life support system for field use and for use in a vehicle

having power supply means, said life support system comprising:

(a) a plurality of separate electrically operable life support units,

(b) a support structure including means for connecting same to a stretcher for transport with said stretcher and means for supporting each of said life support units,

(c) a portable DC power supply electrically connectable to



said life support units for operating same and connected to one of said support structure and stretcher for transporting same, and

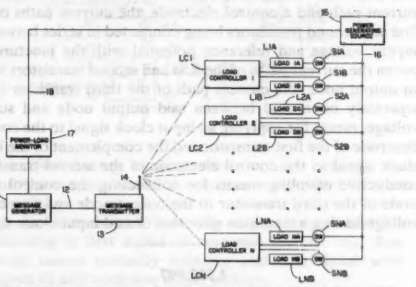
(d) each of said life support units having input power supply terminal means adapted to receive input power from said portable DC power supply and said vehicle power supply, whereby said life support units may be operated for field use using said portable DC power supply, and operable in said vehicle using said vehicle power supply.

4,352,992

APPARATUS FOR ADDRESSABLY CONTROLLING REMOTE UNITS

James A. Buennagel, Indianapolis, Ind., and Richard C. Koch, Cherry Hills Village, Colo., assignors to Regency Electronics, Inc., Indianapolis, Ind.

Filed Feb. 27, 1980, Ser. No. 125,285
Int. Cl.³ G01R *21/00*
U.S. Cl. 307—40 **38 Claims**



1. A load management system for a power network, the power network including a power generating source and a plurality of separately controllable loads, said load management system comprising:

a. central message generator means for transmitting coded radio frequency messages, said messages including a plurality of bits, for each bit there being at least a pair of tones with the upper tone of said pair indicating a first logic state and the lower tone of said pair indicating a second logic state, said messages including a load address indication and a command indication; and

b. a plurality of load controllers, said load controllers being responsive to messages transmitted by said central message generator means, each of said load controllers being responsive to a specific load address indication, each of said load controllers including means for connecting and disconnecting a load to and from the power generating source in response to command indications from said central message generator means; each of said load controllers further including decoder means for translating said radio frequency messages into digital information, said decoder means including:

(1) input means for detecting a particular phase in the cycle of a tone;

(2) several window registers, each for accumulating single bit data applied to its input;

(3) sequencing means for repetitively and sequentially applying the output of said input means to the inputs of a number N of said window registers, said sequencing means including means for sequencing N window registers in a base period of time which is an integer X times the period of said upper tone and an integer Y times the period of said lower tone;

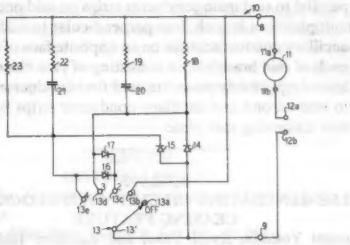
(4) means for detecting repetition in the pattern of data in said N window registers and for generating a first logic signal where there is repetition in each N/X^{th} window register, and for generating a second logic signal where there is repetition in each N/Y^{th} window register.

4,352,993

MULTIPLE POSITION POWER SWITCH

James R. Hannas, Thiensville, Wis., assignor to Silent Running Corporation, Clearwater, Fla.

Filed Sep. 9, 1981, Ser. No. 300,691
Int. Cl.³ H01H *9/30*; H02P *1/24*
U.S. Cl. 307—112 **7 Claims**

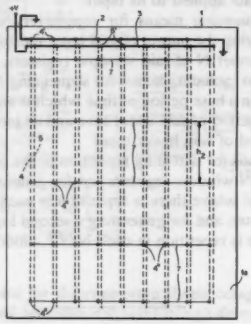


1. A multiple position power control switch for series connection with a load to operate it at different power levels from a power source, comprising: first and second output points for connection to a series circuit comprised of the power source and load; a multiple position switch having a common terminal and at least four other selectively connectible terminals; the common terminal being connected to the first output point and further connecting to a first conductivity type region of first and second diodes; a first of the multiple position switch terminals connecting to the second output point; a second terminal of the switch connecting to second conductivity type regions of third and fourth diodes; a third position of the switch connecting to a first conductivity type region of the third diode and also to one end of a first capacitor whose other end is connected to the second output point; a fourth terminal of the switch connecting to a first conductivity type region of the fourth diode and also to one end of a second capacitor whose other end connects to the second output point; a second conductivity type region of the first diode connecting to the third switch terminal; and a second conductivity type region of the second diode connecting to the fourth terminal of the switch.

4,352,994
DOUBLE-FACE PRINTED-CIRCUIT BOARD

Luciano Inzoli, Lodi, and Gino Piccioni, Noviglia, both of Italy, assignors to Italtel Societa Italiana Telecomunicazioni S.p.A., Milan, Italy

Filed May 8, 1981, Ser. No. 261,698
Claims priority, application Italy, May 9, 1980, 21934 A/80
Int. Cl.[3] H02J 1/00
U.S. Cl. 307—149 6 Claims



1. A printed-circuit board for the energization of a multiplicity of loads, comprising:

a generally rectangular dielectric plate;

a first and a second main conductor strip on one face of said plate close to an edge thereof, said first and second conductor strips being respectively connected to an ungrounded and a grounded terminal of a direct-current source;

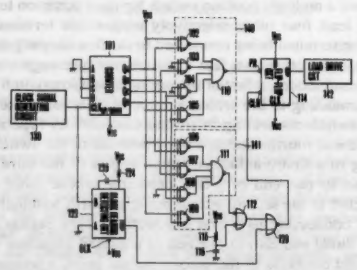
a multiplicity of ancillary conductor strips spacedly disposed parallel to said main conductor strips on said one face; and

a multiplicity oi branch lines perpendicular to said main and ancillary conductor strips on an opposite face of said plate, each of said branch lines consisting of two closely spaced leads respectively joined to said first conductor strip and to said second and ancillary conductor strips by connectors traversing said plate.

4,352,995
PULSE GENERATING CIRCUIT WITH CLOCK PULSE CEASING FEATURE

Kazutoshi Yoshida; Ryuji Yano, and Kazuhiro Ishida, all of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 15, 1980, Ser. No. 186,905
Claims priority, application Japan, Nov. 5, 1979, 54-142091
Int. Cl.[3] H03K 5/05, 13/32
U.S. Cl. 307—265 3 Claims



1. A pulse generating circuit comprising:

a clock signal generating circuit;

a counter which receives an output of said clock generating circuit;

first and second decoders for decoding the contents of said counter;

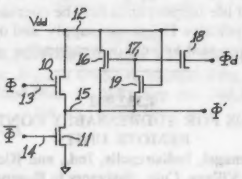
a flip-flop circuit having a preset input terminal to which an output signal of said first decoder is supplied as an preset input signal, a clear input terminal to which an output signal of said second decoder is supplied as a clear input signal, and an output terminal which delivers a pulse whose duration is determined by said preset input and clear input signals; and

an electrical circuit means coupled between said clock generating circuit and the clear input terminal of said flip-flop circuit for detecting ceasing of a clock signal and supplying a detected signal to the clear input terminal of said flip-flop circuit.

4,352,996
IGFET CLOCK GENERATOR CIRCUIT EMPLOYING MOS BOATSTRAP CAPACITIVE DRIVE

Lionel S. White, Jr., Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 21, 1980, Ser. No. 133,378
Int. Cl.[3] H03K 5/01, 5/05, 17/10, 17/284
U.S. Cl. 307—269 11 Claims



1. A clock driver circuit for producing a slightly delayed clock signal at full supply voltage level, comprising first, second and third transistors, each of said transistors having a current path and a control electrode, the current paths of the first and second transistors being connected in series between a supply voltage and reference potential with the juncture between the current paths of the first and second transistors being an output node, the current path of the third transistor being separately connected between said output node and supply voltage, means for applying an input clock signal to the control electrode of the first transistor and the complement of the input clock signal to the control electrode of the second transistor, conductive coupling means for connecting the control electrode of the third transistor to the output node and to a clock voltage having a transition after that of said input clock signal.

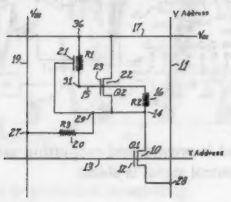
4,352,997
STATIC MOS MEMORY CELL USING INVERTED N-CHANNEL FIELD-EFFECT TRANSISTOR

Joseph H. Raymond, Jr., and Keith H. Gudger, both of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 801,694, May 31, 1977, Pat. No. 4,139,786. This application Feb. 12, 1979, Ser. No. 11,573
The portion of the term of this patent subsequent to Feb. 13, 1996, has been disclaimed.
Int. Cl.[3] G11C 11/40; H01L 29/04, 29/78
U.S. Cl. 307—279 1 Claim

1. A semiconductor integrated circuit formed at a face of a semiconductor body comprising first and second insulated-gate field-effect transistors each having a source-drain path and a gate, the source-drain path of the first transistor being connected between a first node and a source of logic levels, the gate of the first transistor being connected to a different source

of logic levels the source-drain path of the second transistor being connected between the first node and voltage supply means, the gate of the second transistor being connected to a second node, first conductive means exhibiting at least some impedance connecting the first node to the second node, second conductive means exhibiting at least some impedance connecting the first node to reference potential, third conductive means connecting the second node to voltage supply means, the third conductive means exhibiting a low impedance state when the voltage on the first node is near that of the voltage supply means and exhibiting a high impedance state when the voltage on the first node is near that of the reference potential, at least one of the first, second and third conductive means being formed wholly in a deposited layer on said face.

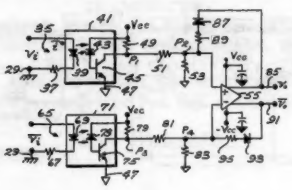


4,352,998

COMMON MODE REJECTION COUPLER

Richard H. Baker, Bedford, Mass., and Bruce D. Semanchik, Bridgewater, N.J., assignors to Reliance Electric Company, Cleveland, Ohio

Filed Apr. 7, 1980, Ser. No. 138,251
Int. Cl.³ H03K *3/42*; H03F *3/45*
U.S. Cl. 307—311 **9 Claims**



1. In a circut having a comon mode voltage between the input and the output thereof, a common mode rejection coupler comprising:

a first circuit means for receiving an input signal and for generating a first signal in response thereto, said first circuit means normally isolating said first signal with respect to said common mode voltage;

a second circuit means for receiving the complement of said input signal and for generating a second signal in response thereto, said second circuit means normally isolating said second signal with respect to said common mode voltage, said second signal being the complement of said first signal;

a comparator for receiving said first and second signals and for generating at least one output signal, said comparator changing the output signal state when said first and second signals complement states; and

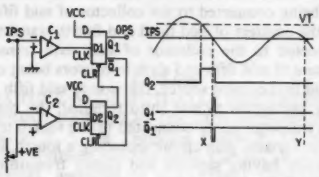
means connected to the output of said comparator for limiting the magnitude of transient changes in one of said first and second signals to less than the magnitude of the non-transient difference between said first and second signals, said limiting means preventing said comparator from changing state when a common mode transient voltage change occurs in one of said first and second signals.

4,352,999

ZERO-CROSSING COMPARATORS WITH THRESHOLD VALIDATION

Robert K. Galpin, Marlow, England, assignor to Plessey Overseas Limited, Ilford, England

Filed Sep. 12, 1980, Ser. No. 186,760
Claims priority, application United Kingdom, Sep. 14, 1979, 7931927
Int. Cl.³ H03K *5/153*; G01R *19/175*
U.S. Cl. 307—354 **2 Claims**



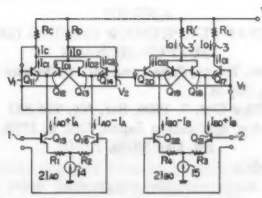
1. A circuit arrangement for use in carrier and timing recovery circuits of a digital data transmission system, the circuit arrangement comprising in combination first and second differential amplifiers and first and second toggles, the first differential amplifier receiving an input signal and producing an output signal when the input signal passes through zero in a first direction, the second differential amplifier receiving the input signal and producing an output signal when the input signal falls in said first direction below a predetermined reference threshold value, the first toggle being connected to the first differential amplifier for receiving the output of the first differential amplifier, the second toggle being connected to the second differential amplifier for receiving the output of the second differential amplifier, wherein the second toggle includes enabling means connected to the first toggle for enabling the first toggle to produce a short pulse in response to the zero transmission of the input signal only when the input signal has previously exceeded the predetermined reference threshold during an immediately preceding half cycle of the input signal.

4,353,000

DIVIDER CIRCUIT

Masaru Noda, Fujisawa, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 18, 1979, Ser. No. 49,084
Claims priority, application Japan, Jun. 16, 1978, 53/72839; Jun. 16, 1978, 53/72840; Jun. 16, 1978, 53/72841
Int. Cl.³ H03G *3/00*; G06G *7/12, 7/20*
U.S. Cl. 307—490 **14 Claims**



1. A divider circuit for dividing a second electrical signal by a first electrical signal, comprising:

a first variable gain circuit including a first differential amplifier having first and second transistors, a second differential amplifier having third and fourth transistors, a third differential amplifier having fifth and sixth transistors, first and second loads, a first current source, and first, second, third, and fourth terminals, the base of said first transistor

being connected to said first terminal, the collector of said first transistor being connected to said first load on one hand and to the base of said first transistor by feedback means on the other hand, the base and the collector of said second transistor being connected to said second terminal, the base of said third transistor being connected to said first terminal, the collector of said third transistor being connected to said second terminal, the base of said fourth transistor being connected to said second terminal, the collector of said fourth transistor being connected to said first load, said second terminal being connected to said second load, the emitters of said first and second transistors being connected to the collector of said fifth transistor, the emitters of said third and fourth transistors being connected to the collector of said sixth transistor, the emitters of said fifth and sixth transistors being connected to said first current source, the base of said fifth transistor being connected to said third terminal, the base of said sixth transistor being connected to the fourth terminal;

a second variable gain circuit including a fourth differential amplifier having seventh and eighth transistors, a fifth differential amplifier having ninth and tenth transistors a sixth differential amplifier having 11th and 12th transistors, a second current source, and fifth, sixth, seventh, eighth, ninth and tenth terminals, the base of said seventh transistor being connected to the base of said ninth transistor on one hand and to said fifth terminal on the other hand, the base of said eighth transistor being connected to the base of said tenth transistor on one hand and to said sixth terminal on the other hand, the collector of said seventh transistor being connected to the collector of said tenth transistor on one hand and to the seventh terminal on the other hand, the collector of said eighth transistor being connected to the collector of said ninth transistor on one hand and to said eighth terminal on the other hand, the emitters of said seventh and eighth transistors being connected to the collector of said 11th transistor, the emitters of said ninth and tenth transistors being connected to the collector of said 12th transistor, the emitters of said 11th and 12th transistors being connected to said second current source, the base of said 11th transistor being connected to said ninth terminal, the base of said 12th transistor being connected to said tenth terminal;

first connection means for connecting said first terminal and said fifth terminal to each other;

second connection means for connecting said second terminal and said sixth terminal to each other;

first input means for applying the first electrical signal to said third and fourth terminals;

second input means for applying the second electrical signal to said ninth and tenth terminals; and

output means for producing a third electrical signal from selected one of said seventh and eighth terminals.

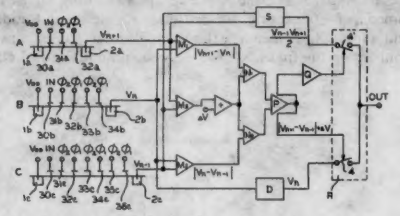
4,353,001

NOISE SIGNAL SUPPRESSOR HAVING IMPROVED OUTPUT SIGNALS

Kyoji Tanahashi, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Oct. 7, 1980, Ser. No. 194,803
Claims priority, application Japan, Oct. 8, 1979, 54-129713
Int. Cl.³ H03K *17/16*
U.S. Cl. 307—542 **13 Claims**

1. A noise suppressor for suppressing noise components contained in an input signal V, said suppressor comprising means for obtaining a value V_{n-1} of said signal V at time t_{n-1}, a value V_n of said signal V at time t_n, and a value V_{n+1} of said signal V at time t_{n+1}, means for receiving a predetermined signal increment V, means for producing quantities $|V_n-V_{n-1}|$, $|V_n-V_{n+1}|$, and $|V_{n-1}-V_{n+1}|+\Delta V$ from said values V_{n-1}, V_n, V_{n+1}, and ΔV, means for generating a control signal when said quantities simultaneously satisfy the relations of $|V_n-V_{n-1}| \geqq |V_{n-1}-V_{n+1}|+\Delta V$ and $|V_n-V_{n+1}| \geqq |V_{n-1}-V_{n+1}|+\Delta V$, and signal synthesizer means for deriving a quantity $(V_{n-1}+V_{n+1})/2$ when said



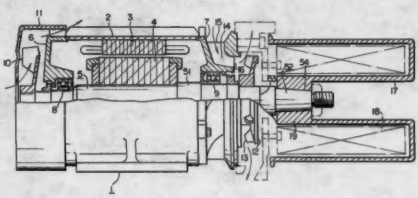
control signal is present and outputting said signal value V_n when said control signal is absent.

4,353,002

ROTARY ELECTRICAL MACHINE CONNECTED TO HIGH-TEMPERATURE LOAD

Hideaki Kobayashi, Sakura; Yasuharu Tamuro, Narashino; Takashi Yasuhara, Yotsukaidomachi, and Kunio Ishii, Sakura, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 30, 1980, Ser. No. 145,230
Claims priority, application Japan, Jun. 27, 1979, 54-80183
Int. Cl.³ H02K *7/10*
U.S. Cl. 310—64 **6 Claims**



1. In a rotary electrical machine for use with a high-temperature load comprising:

a tubular stator;

a cylindrical rotor disposed within said stator;

a rotary shaft secured to said rotor and extending through said rotor; and

bearing means located outside said rotor for journaling said rotary shaft;

the improvement comprises:

a first member formed of a first material of low thermal conductivity constituting a portion of said rotary shaft journalled by said bearing means and supporting said rotor;

a second member formed of a second material of high hardness constituting an output end portion of said rotary shaft remote from said bearing means;

a joint uniting said first member and said second member together located opposite said rotor with respect to said bearing means; and

cooling means mounted on said first member between the vicinity of said joint and said bearing means and being formed of a material having a thermal conductivity greater than that of the material of said first member.

4,353,003

SOLAR ELECTRIC GENERATOR

Dale Sommers, 3001 S. Ogden, Englewood, Colo. 80110

Filed Nov. 17, 1980, Ser. No. 207,376
Int. Cl.³ H02K 45/00
U.S. Cl. 310—306 18 Claims

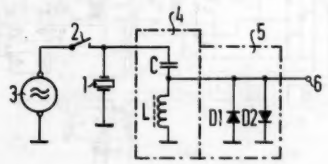
1. A solar electric generator comprising:
a housing including a transparent window portion;
first and second bearing members mounted in said housing;
an elongated shaft rotatably mounted between said first and second bearing members and defining an axis of rotation;
a propeller rigidly mounted on said shaft in a plane transverse to its axis of rotation, said propeller having a plurality of arms positioned about said shaft and extending in a radially outward direction therefrom;
a vane member mounted on the end of each said arm, each said vane having first and second face surfaces, said first face surface being coated with a light absorbing material operative to absorb light in the visible spectrum; and
a generator means associated with said shaft for converting rotational energy of said shaft into electrical energy.

4,353,004

CIRCUIT FOR ALTERNATE TRANSMISSION AND RECEPTION WITH ONLY ONE SOUND SOURCE TRANSDUCER

Peter Kleinschmidt, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 14, 1981, Ser. No. 225,187
Claims priority, application Fed. Rep. of Germany, Jan. 30, 1980, 3003317
Int. Cl.³ H01L 41/08
U.S. Cl. 310—318 7 Claims



1. A circuit arrangement for supplying transmission oscillator voltage to a piezoelectric sound source transducer and further permitting the transducer to operate as a receiving transducer, comprising:
an oscillator for providing an excitation voltage:
a transducer responsive to an excitation voltage to emit waves and responsive to received waves to produce a reception voltage signal;
switching means connected between said oscillator and said transducer and operable to couple and decouple the same;
a series resonant circuit connected in parallel with said transducer and including an inductor and a capacitor and having a resonant frequency f_O defined by

$$L \cdot C = (1/\pi f_O)^2$$

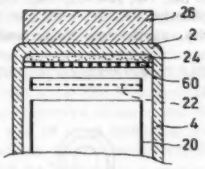
where L and C are the inductance and capacitance values, respectively;
a pair of diodes poled opposite to one another and connected in parallel to one of said elements of said resonant circuit; and
a receiver output connected to said resonant circuit.

4,353,005

CAMERA TUBE WITH MUTUALLY INSULATED, LIGHT ABSORBING PARTICLES ON GUN SIDE OF TARGET

Hendricus F. J. J. van Tongeren; Paulus P. M. Schampers; Willem P. Weijland, and Marino G. Carasso, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 16,590, Mar. 1, 1979, Pat. No. 4,251,748, which is a continuation of Ser. No. 780,168, Mar. 22, 1977, abandoned. This application Jun. 20, 1980, Ser. No. 161,546
Claims priority, application Netherlands, Apr. 12, 1976, 7603838
Int. Cl.³ H01J 29/45, 31/26
U.S. Cl. 313—371 4 Claims



1. A camera tube comprising an envelope having an entrance window, a photosensitive target arranged in said envelope at a position such that light passing through said window is incident on a first side of said target, a signal electrode on the first side of the target, and means for producing an electron beam for scanning said target, characterized in that said camera tube further comprises means, disposed on a side of said target opposite said first side, for absorbing light passing through said target, said means having a mosaic structure of mutually insulated areas.

4,353,006

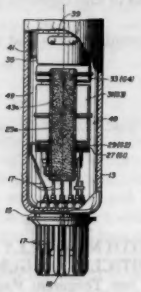
CRT WITH MEANS FOR SUPPRESSING ARCING THEREIN

Horst E. P. Schade, Blawenburg, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 28, 1980, Ser. No. 153,970
Int. Cl.³ H01J 29/02, 29/82
U.S. Cl. 313—457 7 Claims

1. A cathode-ray tube comprising an evacuated envelope including an electrically-insulating neck, and an electron-gun mount assembly in said neck, said mount assembly comprising a plurality of electrodes mounted on at least two electrically-

insulating support rods, said assembly being closely spaced from the inner surface of said neck, at least a portion of the



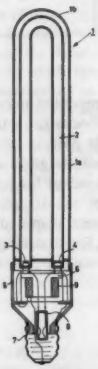
surface of each of said support rods opposite said neck carrying a patch coating of chromium oxide.

4,353,007

DISCHARGE LAMP UNIT INCLUDING INTEGRAL BALLAST

Jozef C. Moerkens, and Leonard Woldring, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 934,961, Aug. 18, 1978, abandoned.
This application Feb. 26, 1980, Ser. No. 124,879
Claims priority, application Netherlands, Aug. 23, 1977, 7709264
Int. Cl.³ H01J *7/44, 17/34, 23/16, 29/96;* H01K *1/62*
U.S. Cl. 315—62 **1 Claim**



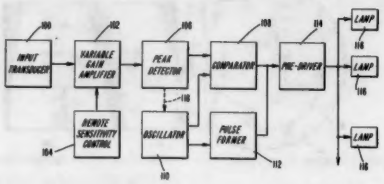
1. A lamp unit comprising a mercury-vapor discharge tube and an inductive stabilization ballast for said discharge tube, said ballast forming one mechanical whole with said discharge tube, said discharge tube being provided with at least two internal electrodes, a discharge path between said electrodes being electrically in series with said stabilization ballast, means for applying a voltage which is nominally S volts to the series connection of the discharge path and said stabilization ballast, said lamp unit having only one lamp base, said discharge tube being a low-pressure discharge tube whose arc voltage is between 0.54 S Volt and 0.64 S Volt, said lamp being substantially ballasted by said inductive stabilization ballast, the volume of the discharge space of the discharge tube being smaller than 40 cubic centimeters and said internal electrodes of the discharge tube are of a preheatable type.

4,353,008

DISPLAY APPARATUS FOR A DRUM

Walter Dorfman, Warminster, Pa., assignor to Alfred T. Moffatt, Fort Washington, Pa., a part interest

Filed Jul. 7, 1980, Ser. No. 165,961
Int. Cl.³ H01K *7/00;* H01J *7/24*
U.S. Cl. 315—114 **13 Claims**



1. A display apparatus responsive to an audio signal comprising:

(a) a light source having a variable resistance, said resistance having an initial value when said light source is cold and a larger value when said light source is warm;

(b) modulator means responsive to said audio signal for controlling the illumination of said light source; and

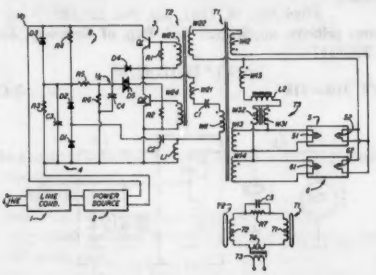
(c) circuit means, including a pulse generator means for periodically passing pulses of current through said light source, for warming said light source prior to said illumination of said light source by said modulator means sufficient to increase said resistance above said initial value.

4,353,009

DIMMING CIRCUIT FOR AN ELECTRONIC BALLAST

William C. Knoll, Turbotville, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Filed Dec. 19, 1980, Ser. No. 218,311
Int. Cl.³ H05B *41/29*
U.S. Cl. 315—220 **9 Claims**



1. In an electronic ballast circuit including an interstage transformer having a primary winding adapted to be coupled to a lamp filament and a secondary winding coupled to an input of an inverter, said interstage transformer for supplying a feedback signal to the inverter, and an output transformer having a primary winding coupled to an output of the inverter and a secondary winding adapted to be coupled to a lamp filament, said output transformer for supplying current to the lamp filament, a dimmer circuit in the form of a feedback loop comprising:

a first winding on the primary of the output transformer;

a second winding on the primary of the interstage transformer; and

dimmer control means coupling the first and second windings for varying the impedance in the loop and therefore

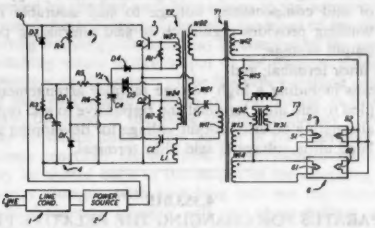
the amount of feedback applied to the inverter input and the amount of power supplied to the lamp filament.

4,353,010

TRANSISTOR DRIVE SCHEME FOR FLUORSCENT LAMP BALLAST

William C. Knoll, Turbotville, and David L. Bay, Muncy, both of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Dec. 19, 1980, Ser. No. 218,388
Int. Cl.³ H05B 41/29
U.S. Cl. 315—220 2 Claims



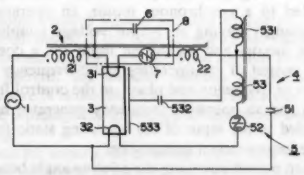
1. In an electronic ballast circuit including a transistor inverter and an interstage transformer, said interstage transformer including a first primary winding adapted to be coupled in series with at least one lamp filament for developing a feedback signal derived from the filament current and including at least one secondary winding coupled to an input of the inverter, an improved transistor drive scheme including a phase-feedback winding on the primary of the interstage winding, said phase feedback winding coupled in series with an inverter output circuit loop for developing a phase-feedback signal in proportion to the output circuit loop current, which phase feedback signal is coupled to an input of the inverter via a secondary winding on the interstage transformer.

4,353,011

HOT CATHODE DISCHARGE LAMP LIGHTING DEVICE

Isao Kaneda, Otsu, Japan, assignor to New Nippon Electric Company, Ltd., Osaka, Japan

Filed Nov. 28, 1980, Ser. No. 211,158
Claims priority, application Japan, Nov. 27, 1979, 54-154092
Int. Cl.³ H05B 41/16
U.S. Cl. 315—240 12 Claims



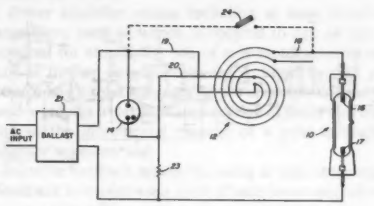
1. A discharge lamp lighting device, comprising hot cathode type discharge lamp means having filaments connected across an a.c. power source through current limiting means, high frequency, high voltage generating means connected in parallel with said discharge lamp means to apply a high frequency and high voltage output thereto at least at the time of initial ignition, and a parallel circuit including a capacitor and a switching element connected to one of said filaments, said switching element comprising a current controlled resistance type switching semiconductor having a break-over voltage lower than the terminal voltage of said capacitor at the initial ignition period and higher than said capacitor terminal voltage during the lamp operating reignition period, whereby the current flowing through said one filament is reduced during the lit operation of the lamp.

4,353,012

PULSE INJECTION STARTING FOR HIGH INTENSITY DISCHARGE METAL HALIDE LAMPS

Charles N. Fallier, Jr., Westford, and Joseph M. Proud, Wellesley Hills, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Apr. 24, 1981, Ser. No. 256,865
Int. Cl.³ H05B 37/00
U.S. Cl. 315—289 11 Claims



1. A light source comprising:

a high pressure discharge lamp including a discharge tube having electrodes sealed therein at opposite ends and enclosing a fill material which emits light during discharge; and

a starting circuit including

a spiral line pulse generator including two conductors and two insulators, each in the form of an elongated sheet, in an alternating and overlapping arrangement which is rolled together in a spiral configuration having a plurality of turns, said spiral line pulse generator including an output terminal coupled to one of said electrodes of said lamp and a pair of input terminals, one of said input terminals and the other of said electrodes of said lamp being adapted for coupling to a source of lamp operating power and for delivering lamp operating power, received from the source, through said spiral line pulse generator to said discharge lamp,

means for applying ac voltage between the conductors of said spiral line pulse generator, and

a breakdown switch coupled between the conductors of said spiral line generator and arranged to short circuit said conductors at a firing selected to be less than the peak of said ac voltage, and higher than the normal discharge voltage of said lamp whereupon

said spiral line pulse generator provides at said output terminal a high voltage, short duration pulse of sufficient energy to initiate discharge in said discharge lamp causing said ac voltage to drop below said firing voltage.

4,353,013

DRIVE CIRCUITS FOR A HIGH RESOLUTIONS CATHODE RAY TUBE DISPLAY

Frederick D. Lehman, Rockford, Minn., assignor to CPT Corporation, Eden Prairie, Minn.

Division of Ser. No. 896,813, Apr. 17, 1978, Pat. No. 4,238,774.
This application Dec. 17, 1979, Ser. No. 103,998
Int. Cl.³ H01J 29/70, 29/72
U.S. Cl. 315—387 6 Claims

1. In a cathode ray tube display circuit having a high frequency two-way scan circuit, a high frequency video circuit and a vertical yoke, a drive circuit for vertical scanning comprising:

receiving means for receiving an input sync pulse for vertical retrace;

means for generating a linear ramp signal after the input signal has been received, the ramp generating means com-

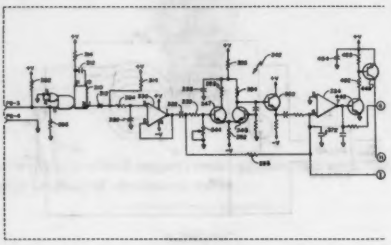
prising an energy source and energy storage means connected to the energy source for accumulating energy to generate the ramp signal;

solid state shaping means for shaping the linear ramp to compensate for nonlinearities due to the surface of the tube;

summing means connected to the ramp generating means and the shaping means for producing a vertical drive signal compensated for nonlinearities due to the surface of the tube;

vertical retrace means for causing a retrace scan;

output means connected to the yoke to drive the yoke ac-



cording to the signal produced, the output means including means for decoupling high frequencies caused by the two-way scan circuit and video circuit; and

wherein the receiving means comprises timing means for generating a finite time interval during which the energy accumulated by the energy storage means is dissipated and wherein the drive signal produced by the ramp generating means and the shaping means causes a trace scan to occur and wherein the means for causing a retrace scan comprises solid state components connected to the summing means and the vertical yoke of the tube for generating a retrace scan signal after the energy has been dissipated from the energy storage means.

4,353,014

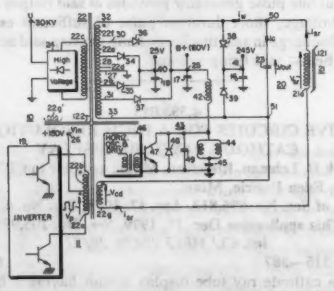
TELEVISION RECEIVER FERRORESONANT LOAD POWER SUPPLY WITH REDUCED SATURABLE REACTOR CIRCULATING CURRENT

Donald H. Willis, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 20, 1981, Ser. No. 255,396

Int. Cl.³ H01J *29/70*

U.S. Cl. 315—411 **21 Claims**



1. A saturating core power supply providing a regulated ultor voltage for a television display system, comprising:

a source of alternating input voltage;

a saturable reactor including a magnetizable core and a winding located on said core;

means coupled to said source and to said saturable reactor winding for developing a magnetizing current to generate an alternating magnetic flux in said magnetizable core that links said winding so as to develop an alternating polarity output voltage;

a capacitance for developing a circulating current that generates a magnetic flux in a core section associated with said reactor winding that aids in magnetically saturating said associated core section during each cycle of said alternating polarity output voltage;

a source of compensating voltage coupled to said saturable reactor winding and related to said alternating input voltage so that the combined effect of the development of said circulating current by said capacitance and the application of said compensating voltage to said saturable reactor winding provides regulation of said alternating polarity output voltage;

an ultor terminal; and

means including a high voltage rectifier arrangement coupled to said ultor terminal and responsive to said regulated alternating polarity output voltage for developing a regulated ultor voltage at said ultor terminal.

4,353,015

APPARATUS FOR CHANGING THE RELATIVE PHASE ANGLES OF OUTPUT SHAFTS OF A MULTIPLE MOTOR ELECTRIC DRIVE

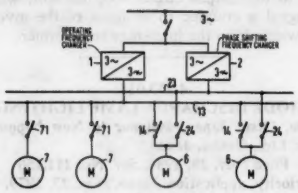
Dietrich Krampe, Neunkirchen, and Herbert Schleicher, Dettlingen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 19,562, Mar. 12, 1979, abandoned. This application May 22, 1981, Ser. No. 266,582

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1978, 2811292

Int. Cl.³ H02P *1/54*

U.S. Cl. 318—41 **6 Claims**



1. In an arrangement comprising an electrical multiple-motor drive having plural output shafts, each output shaft being coupled to a synchronous motor, an operating static frequency changer having an output voltage coupled to the synchronous motors and having an input for a control frequency, the output of the operating static frequency changer depending as to frequency and phase on the control frequency at the input, and an operating frequency generator having an output coupled to the input of the operating static frequency changer, the improvement comprising:

apparatus to permit changing the relative angle between the output shaft of one synchronous motor and the output shaft of another synchronous motor including:

a phase-shifting frequency generator having a variable frequency output;

a phase-shifting static frequency changer having a control input and having the same voltage output level as the operating frequency changer;

means for varying the output frequency of the phase-shifting frequency generator;

synchronizing means having as inputs the output voltages of both static frequency changers for determining when the phases of the output voltages are in agreement and generating a control signal in response thereto;

first switching means for selectively coupling the input of

the synchronous motor, the shaft angle of which is to be varied, to the output of the phase-shifting static frequency changer or to the output of the operating static frequency changer;

second switching means for selectively coupling the input of the phase-shifting static frequency changer to the output of the operating frequency generator; and

means to permit operation of the first switching means only when the control signal indicating agreement in phase between the output voltages of the static frequency changers is present,

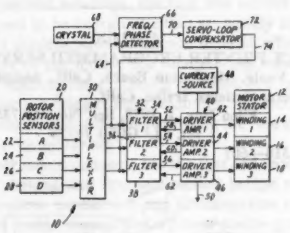
whereby, when it is desired to vary the relative angle, the input of the synchronous motor being changed may be coupled by the first switching means to the output of the phase-shifting frequency changer, the input of the phase-shifting frequency changer may be coupled by the second switching means to the output of the frequency-shifting generator, the frequency of the frequency-shifting generator may be changed to carry out the change in relative angle, the input of the phase shifting frequency changer may be shifted back to the output of the operating frequency generator, and the input of the synchronous motor may be shifted back to the output of the operating frequency changer, with switching between the operating static frequency changer and the phase-shifting static frequency changer occurring substantially without phase angle error.

4,353,016

LINEAR MOTOR CONTROL SYSTEM FOR BRUSHLESS DC MOTOR

Vernon A. Born, Minneapolis, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 22, 1981, Ser. No. 256,383
Int. Cl.³ H02K *29/02*
U.S. Cl. 318—254 **6 Claims**



1. A motor control system adapted to control a brushless direct current motor of the type having a rotor having a plurality of permanent magnet poles at equal angular locations about the axis thereof, the angular spacing therebetween being 360°/N where N is the number of poles, and a stator having at least three windings for providing at least three fields per pole comprising

(a) means for sensing the position of the rotor relative to the stator, including a multisector marking means secured to said rotor for identifying each pole and at least four sensors positioned proximate to said marking means for detecting said sectors of the marking means and, being angularly spaced from each other to provide at least three sequential signals indicative of the incremental passage of a pole through an angular segment corresponding to said angular spacing, each sensor providing a square wave output signal, each transition of which denotes the passage of one pole past that sensor,

(b) multiplex means for alternately selecting and passing therethrough output signals from a first or second group of said sensors, the first group including a succession of at least three equally angularly spaced sensors, and the second group including a similar succession of at least three equally angularly spaced sensors including the second and third sensor of said first group, whereby switching from the first to the second group enables the processing of square wave output signals indicative of a set of incremental positions of the rotor advanced in time over that provided by said first group to offset subsequent electrical time delays,

(c) filter means including at least three independent filter sections, each filter section being coupled to process signals corresponding to a given sensor output passed through said multiplex means, and having a limited upper frequency cutoff to provide, in response thereto, time delayed motor control signals having an essentially sinusoidal waveform,

(d) driver amplifier means including at least three linear amplifiers, each of which is coupled to one of said filter sections for amplifying one of said motor control signals and is further coupled between a direct current power source and a selected winding, for sequentially energizing said windings to provide a succession of fields corresponding to the incremental passage of a pole through said angular segment, and

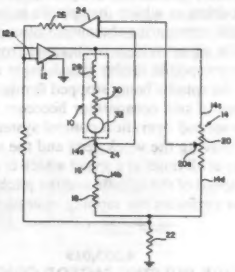
(e) negative feedback means including at least three separate feedback loops between each of said linear amplifiers and an associated filter section for responding to the current supplied to each of said windings to thereby control the intensity of each of said motor control signals such as to maintain said supplied current at a relatively constant level, whereby improved control over motor speed is effected, the substantially sinusoidal drive through said linear amplifiers markedly reducing motor noise and incremental speed variations.

4,353,017

VELOCITY COMPENSATION FOR LIMITED DISPLACEMENT MOTORS

Edward F. Burke, Jr., Reading, Mass., assignor to M.F.E. Corporation, Salem, N.H.

Filed Dec. 1, 1976, Ser. No. 746,467
Int. Cl.³ G05B *5/01*
U.S. Cl. 318—331 **4 Claims**



1. A veocity-compensated motor circuit comprising:

A. a limited-displacement motor having a control winding,

B. means for supplying a signal for said control winding to effect a mechanical displacement by said motor,

C. a bridge circuit incorporating

1. said control winding in a first arm of said bridge circuit, and

2. means for balancing said bridge circuit to eliminate the effect of current from said signal supplying means on the output of said bridge circuit, whereby the bridge circuit output signal represents the velocity of said motor, said balancing means including a reactance in another arm of said bridge to balance out the reactance of said control winding, and

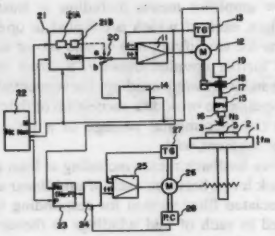
D. feedback circuitry for applying the bridge output signal to damp said motor.

4,353,018

CONTROL SYSTEM FOR SYNCHRONIZED OPERATION OF MACHINE TOOL MOTORS

Yoshinori Kohzai, and Yoshiki Fujioka, both of Hino, Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Aug. 20, 1980, Ser. No. 179,937
Claims priority, application Japan, Aug. 24, 1979, 54-107893
Int. Cl.³ G05B *19/24*
U.S. Cl. 318—571 **3 Claims**



1. A control system for synchronizing the operation of motors in a machine tool for performing tapping on a workpiece, which control system comprises:

first operation control section means for controlling a spindle drive motor which rotates the spindle of the machine tool, the spindle being configured for holding a tap for the tapping operation; and

second operation control section means for controlling a motor which moves the workpiece and the spindle relative to one another axially of the spindle;

wherein said first operation control section means includes controller means for stopping the spindle firmly at a rotational position set at a predetermined angle of rotation, the controller means including a comparator and a function generator for producing a signal indicative of the rotational position at which the spindle is to be stopped, said comparator comparing the output of said function generator with a signal which is obtained from a resolver and which corresponds to the actual angle of rotation of the spindle, the spindle being stopped firmly at such point that the output of said comparator becomes zero; and

wherein said second operation control system means includes means for moving the workpiece and the spindle relative to one another at all times at a speed which is the product of the rotational speed of the spindle and the pitch of the threads on the tap that performs the tapping operation.

4,353,019

ADAPTIVE PULSING MOTOR CONTROL FOR POSITIONING SYSTEM

James S. Sweeney, Jr., Laguna Beach, Calif., assignor to Unisen, Inc., Irvine, Calif.

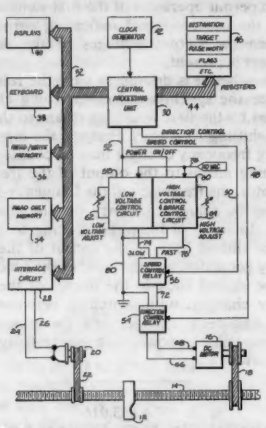
Filed Jul. 29, 1980, Ser. No. 173,274
Int. Cl.³ G05B *11/18*
U.S. Cl. 318—594 **26 Claims**

1. In a positioning system for moving a driven element precisely to a destination, in combination with (a) a direct current motor which moves the driven element in response to on-off driving pulses and which is capable of exerting variable amounts of moving effort on the driven element depending on the duration of the driving pulses; (b) means for measuring the position of the driven element and its distance from the destination; and (c) means for causing the motor to move the driven element to the vicinity of the destination relatively quickly:

means for providing to the motor a first short duration driving pulse once the driven element has reached the vicinity of the destination;

means for determining whether said pulse has moved the driven element toward the destination;

means for providing to the motor successive driving pulses in a pulsing cycle, each pulse in a cycle having a slightly



longer duration than the previous pulse, until the driven element has moved toward the destination; and

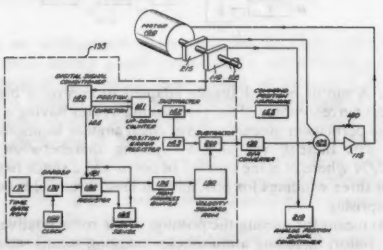
means for beginning the next pulsing cycle with a pulse having the short duration of the first pulse after each measured movement of the driven element toward the destination.

4,353,020

IMPACT PRINTER PROGRAMMED SERVO SYSTEM

John R. Veale, Manhattan Beach, Calif., assignor to Plessey Peripheral Systems, Irvine, Calif.

Filed Nov. 1, 1978, Ser. No. 956,735
Int. Cl.³ G05B *19/28*
U.S. Cl. 318—601 **23 Claims**



1. A positioning control system for controlling a positioning mechanism within a control range, comprising:

a digital feedback control system generating a digital position error input signal for coarse control of said positioning mechanism;

an analog feedback control system generating an analog position error input signal to said positioning mechanism, said analog position error signal varying periodically with distance, the period of said variation being short in comparison with said control range of said servo system, said analog position error input signal having a peak periodic amplitude which is small in comparison with the amplitude of said digital position error signal except when said

servo system is within a predetermined distance from a desired location, and thus, providing fine control of said positioning mechanism; and

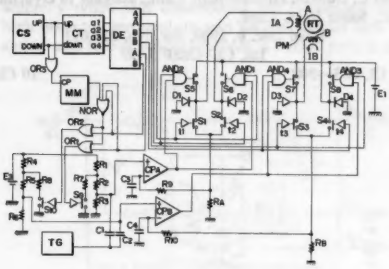
said digital and analog feedback control systems providing continuous and simultaneous feedback to control said positioning mechanism.

4,353,021

CONTROL CIRCUIT FOR A PULSE MOTOR

Kazuo Watanabe, Hachioji, and Hachiro Makabe, Fussa, both of Japan, assignors to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Filed Mar. 18, 1980, Ser. No. 131,358
Claims priority, application Japan, Mar. 26, 1979, 54-35211
Int. Cl.³ G05B *19/40*
U.S. Cl. 318—696 **5 Claims**



1. A control circuit for use with a pulse motor, the circuit comprising:

(a) first and second windings, the first and second windings being adapted to be energized either separately or together in a certain predetermined sequence so as to effect control and rotation of the motor, the motor being either rotated thereby in discrete steps or being operated at a stand still;

(b) first and second bridge means, each first and second bridge means having switch means for allowing the first and second windings to be energized;

(c) a sequencer means connected to the first and second bridge means for driving said first and second bridge means in a manner to allow connection and disconnection of the first and second bridge means from a power source provided by the circuit in a predetermined sequence;

(d) a first generator means connected to the sequencer for providing the sequencer with pulse drive motor signals;

(e) a comparative stage connected to the first and second windings and the first bridges and second bridge means, respectively, the comparative stage being adapted to control the switch means in response to receiving a load current of the motor;

(f) a comparison reference changing means connected between the comparator stage and the sequencer for selectively providing the comparator stage with a comparison reference signal in response to receiving motor drive pulse signals, the comparator reference signal comprising a full load current signal and a reduced load current signal;

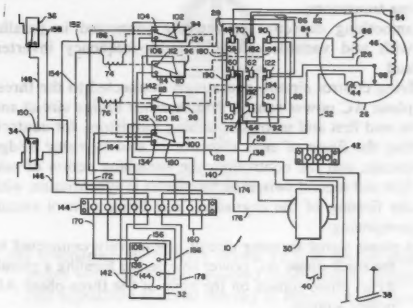
(g) control means connected between the sequencer and the comparison reference changing means for switching the comparison reference changing means in response to certain motor drive pulse signals so as to enable either one of the first and second windings or both of the first and second windings to be energized with either the full current or the reduced current, whereby the reduced current signal is provided at the comparator stage whom the motor is in a standstill mode of operation.

4,353,022

TORQUE REVERSING MOTOR CONTROL STRUCTURE AND METHOD

Richard A. Young, Little Rock, Ark., assignor to The Ceco Corporation, Chicago, Ill.

Filed Jan. 17, 1980, Ser. No. 113,058
Int. Cl.³ H02P *1/44, 3/18*
U.S. Cl. 318—753 **4 Claims**



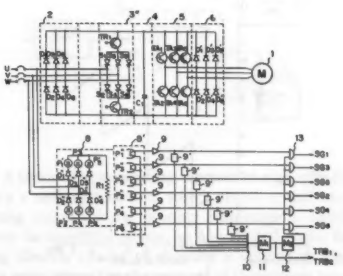
1. Torque reverse motor control structure for use in conjunction with split phase or capacitive start motors capable of operation in both forward and reverse directions comprising a switch for detecting and indicating when the motor has stopped, comprising a motor contactor operably associated with said switch including open and close contactor relays and means operably associated with the motor contactor for preventing reversing of the motor contactor without the switch being closed to insure a positive motor reverse including a transformer having a primary and secondary circuit operably associated with the contactor having the open and close contactor relays in the secondary circuit thereof and the switch in the primary circuit.

4,353,023

OPERATION CONTROL APPARATUS FOR AC MOTORS

Shigeki Kawada, Hino, and Hiroshi Ishida, Hamuramachi, both of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Aug. 8, 1980, Ser. No. 176,508
Claims priority, application Japan, Aug. 16, 1979, 54-104443
Int. Cl.³ H02P *3/18*
U.S. Cl. 318—762 **11 Claims**



1. An apparatus for controlling the operation of an AC motor, said apparatus connected to a three-phase AC power source, said apparatus comprising:

means for receiving an externally applied command signal;

a rectifier, connected to the three-phase AC power source, for converting alternating current into direct current;

a variable-voltage variable-frequency inverter, operatively

connected to said rectifier, for applying drive signals to the AC motor upon receiving the direct current output of said rectifier, said drive signals having a supply voltage and frequency which are varied in accordance with the externally applied command signal;

first and second switching transistors operatively connected between said inverter and said rectifier;

a thyristor bridge circuit for regenerative action operatively connected in series between said first and second switching transistors;

a smoothing capacitor operatively connected in parallel with said variable-voltage variable-frequency inverter; and

a firing control circuit, operatively connected to the three-phase AC power source, said thyristor bridge circuit and to said first and second switching transistors, for controlling the firing of each thyristor in said thyristor bridge circuit, and for controlling the switching action of said first and second switching transistors in synchronism with the firming of the thyristors, said firing control circuit comprising:

a phase signal forming circuit, operatively connected to the three-phase AC power source, for forming a plurality of phase signals on the basis of the three-phase AC power source;

a first firing control signal generating circuit, operatively connected to said phase signal forming circuit and to said first and second switching transistors, responsive to the phase signals formed by said phase signal forming circuit to generate first firing control signals for controlling the on-off action of said first and second switching transistors; and

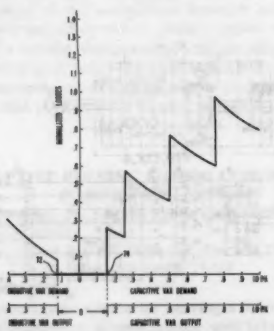
a second firing control signal generating circuit, operatively connected to said phase signal forming circuit, said first firing control signal generating circuit and said thyristor bridge rectifier circuit, responsive to the phase signals formed by said phase signal forming circuit to generate second firing control signals for controlling the firing of said thyristors.

4,353,024

CONTROL FOR VAR GENERATOR WITH DEADBAND

Laszlo Gyugyi, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 10, 1980, Ser. No. 158,107
Int. Cl.³ G05F 1/70
U.S. Cl. 323—211 **17 Claims**



1. A VAR generator of the type which provides a controlled conduction path for reactive current between two conductors in an electrical system across which the voltage of said electrical system may deviate from a nominal value, comprising:

(a) capacitance means disposed as part of said conduction path for providing a capacitive component of said reactive current in said conduction path during a predetermined increment of time;

(b) inductance means disposed as part of said conduction path for providing an inductive component of said reactive current in said conduction path during a predetermined increment of time; and

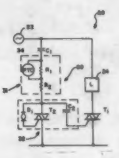
(c) control means interconnected with said capacitance means and said inductance means for determining the magnitude of said reactive current required as a function of said deviation of said voltage from said nominal value and for cooperating with said capacitance means and said inductance means to provide said required reactive current except in a predetermined range of deviation of said voltage.

4,353,025

PHASE CONTROLLED VOLTAGE REDUCING CIRCUIT HAVING LINE VOLTAGE COMPENSATION

Robert C. Dobkin, Hillsborough, Calif., assignor to Hybrinetics, Inc., Santa Rosa, Calif.

Filed Dec. 8, 1980, Ser. No. 214,011
Int. Cl.³ G05F 5/00
U.S. Cl. 323—300 **10 Claims**



1. A circuit device for reducing by a predetermined amount the RMS value of an incoming AC line voltage applied to a given load, said device comprising:

(a) externally controllable switching means operable between a conductive state for electrically connecting said given load with said line voltage and a non-conductive state for electrically disconnecting said load from said line voltage; and

(b) a control circuit including

(i) means responsive to said line voltage for producing an AC control voltage and associated control current which leads said line voltage by about 90 degrees, and

(ii) control means free of any RC timing circuitry connected with said switching means and responsive to the amplitude of said control current during each half cycle of said line voltage for determining directly from said control voltage and associated current the period during each of said half cycles that said switching means is in said conductive state without resorting to RC timing circuitry, whereby to controllably reduce the amount of said AC line voltage applied to said load by said predetermined amount while minimizing fluctuations in said predetermined amount as a result of fluctuations in the amplitude and/or frequency of said line voltage.

4,353,026

SHORT CHASER WITH RELAY OPERATED INDICATOR FOR LOCATING AND INDICATING THE CLEARANCE OF SHORT CIRCUITS

Harry J. Edwards, Jr., 1009 Baldwin Rd., Richmond, Va. 23229

Filed Feb. 12, 1980, Ser. No. 120,774
Int. Cl.³ G01R 31/02, 31/08
U.S. Cl. 324—51 **5 Claims**

1. A short circuit monitoring and locating apparatus for use in locating and clearing short circuits in wiring circuits between a high potential terminal and a low potential terminal, said apparatus comprising:

a casing;

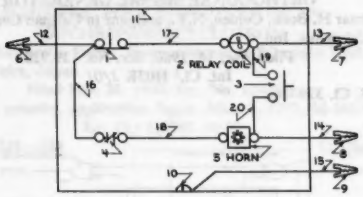
first conductor means adapted for connection to said high potential terminal;

second conductor means adapted for connection to a first wire of the shorted circuit which has been decoupled from said high potential terminal;

third conductor means adapted for connection to the low potential terminal of said wiring circuits;

relay means having a relay coil means and relay contact means, said relay coil means being connected in series between said first and second conductor means for conducting current therebetween and said contact means being connected between said first and third conductors for changing between normal and energized states, one state being open and the other closed, in response to a current in said relay coil means;

audible indicating means, said contact means of said relay means and said audible indicating means being connected in series between said first and third conductor means; whereby when said connections are established to the high potential terminal, to said shorted circuit first wire and to said low-potential terminal, a circuit path is established through the first conductor means, the relay coil means and the second conductor means by the short circuit and over which path sufficient current flows to energize said relay coil means and change the state of said relay contact means, thereby changing the state of current flow to said audible indicating means, with said new state of current flow being maintained so long as the short circuit remains, and when the short circuit is cleared, said relay coil means becomes deenergized causing said relay contact means to return to their normal state, thus again changing the state of current flow to said audible indicatior means to indicate clearing of said short circuit; and,



a normally open switch means connected between said second and third connector means for closing a momentary circuit path through said relay coil means and said second and third conductor means, to energize said relay coil means and thereby change said relay contact means to said energized state when the short circuit current is insufficient to energize said relay coil means to change said relay contact means to said energized state, but is sufficient to maintain the relay contact means in said energized state.

4,353,027

CONTACTLESS RESISTIVITY MEASUREMENT METHOD AND APPARATUS

Arthur Ballato, Long Branch, and Gerald J. Iafrate, Toms River, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 27, 1980, Ser. No. 200,627
Int. Cl.³ G01R *29/22*
U.S. Cl. 324—56 **14 Claims**

1. A non-destructive, contactless method of measuring the resistivity of a semiconducting crystalline material, which comprises the steps of:

(a) supporting a disc of said semiconducting crystalline material in an air gap in such a manner that the disc is free to vibrate;

(b) establishing an alternating electric field in said air gap thereby to cause said disc to vibrate piezoelectrically;

(c) adjusting the frequency of said alternating electric field to drive said disc into and beyond resonance; and

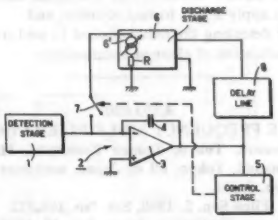
(d) comparing the current drawn by said disc in step (c) above with previously prepared characteristic graphs for said crystalline material thereby to determine the resistivity of the sample under test.

4,353,028

MEASURING CIRCUIT FOR INTEGRATING ELECTRICAL SIGNALS IN A GAMMA CAMERA

Hans Faddegon, Haarlem, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 12, 1979, Ser. No. 102,697
Claims priority, application France, Dec. 18, 1978, 78 35600
Int. Cl.³ G01R *19/00*; G01T *1/20*
U.S. Cl. 324—111 **6 Claims**



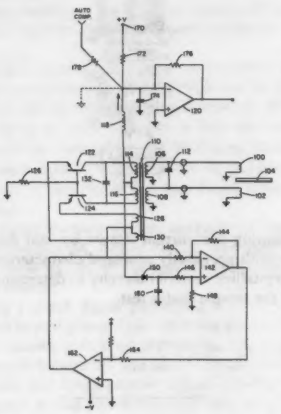
1. In a circuit for measuring electric charge which is produced by a detection device, which circuit comprises charge integrating means having an input connected to receive current from the detection device, an output, and means for accumulating electric charge to produce a voltage at the output which is proportional to the integral of the current received at the input and discharge means having a control input and including a voltage controlled current source which is connected to discharge the means for accumulating charge upon the occurrence of a predetermined control condition and at a rate which is proportional to a voltage at the control input; the improvement comprising:

a delay line connected between the output of the integrating stage and the control input of the discharge means.

4,353,029
SELF INVERTING GAUGING SYSTEM

Robert C. Abbe, Newton, and Noel S. Poduje, Needham Heights, both of Mass., assignors to ADE Corporation, Watertown, Mass.

Division of Ser. No. 877,332, Feb. 13, 1978, Pat. No. 4,217,542. This application Feb. 29, 1980, Ser. No. 125,989
Int. Cl.³ G01R *33/12*
U.S. Cl. 324—236 **6 Claims**

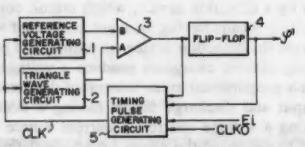


1. A conductance gauging system for the conductance of an element comprising:
- a pair of transistors;
- a center tapped transformer primary in the collector circuit of said transistor pair;
- means for driving said transistors through the center tap;
- a center tapped transformer secondary in the base-emitter circuit of said transistor pair to provide regenerative feedback;
- means for maintaining a predetermined signal level between the center taps of said primary and secondary;
- a resonant circuit responsive to the signal across said primary to apply a flux to said element; and
- means for detecting the drive applied to said transistor pair as an indication of element conductance.

4,353,030
PULSE FREQUENCY MULTIPLIER CIRCUIT

Hideo Nakamura, Tokyo; Tsuneo Funabashi, Hachioji, and Haruo Koizumi, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 5, 1980, Ser. No. 184,312
Claims priority, application Japan, Sep. 10, 1979, 54/115297
Int. Cl.³ H03K *5/00*
U.S. Cl. 328—38 **6 Claims**



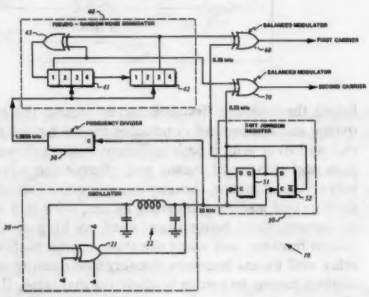
1. A pulse frequency multiplying circuit comprising:
- a reference voltage generating circuit which after a first capacitor charged to a given potential is discharged at a fixed voltage attenuating rate of a period corresponding to the pulse width of a reference pulse, produces the terminal voltage of said first capacitor as a reference voltage;
- a triangle wave voltage generating circuit which alternately discharges a pair of second capacitors charged to a given potential at a voltage attenuating rate n times that of said first capacitor, and alternately produces in the form of a triangle wave shape an attenuated voltage obtained at the terminal of said second capacitors during the discharge period;
- a comparator circuit for producing pulse when said reference voltage is coincident with said triangle wave voltage;
- a flip-flop circuit which is driven by an output pulse from said comparator circuit; and
- a timing pulse generating circuit which responds to an output pulse from said flip-flop circuit and produce a timing signal for switching the charge/discharge operation of each of said second capacitors for transfer to said triangle wave voltage generating circuit,

whereby a pulse of a frequency n times of said reference pulse is produced from said flip-flop circuit.

4,353,031
ORTHOGONAL SIGNAL GENERATOR

Ditmar H. Bock, Colden, N.Y., assignor to Calspan Corporation, Columbus, Ind.

Filed Apr. 14, 1980, Ser. No. 139,920
Int. Cl.³ H03K *3/01*
U.S. Cl. 328—62 **6 Claims**



1. An orthogonal signal generator, comprising;
- (a) a source of clock pulses at a fixed frequency,
- (b) pseudo-random noise generating means responsive to said clock pulses for generating a pseudo-random code in the form of two signals one of which is delayed with respect to the other,
- (c) means for generating a pair of orthogonal carrier signals, and
- (d) means for modulating one of said two signals onto one of said pair of orthogonal carrier signals and the other of said two signals onto the other of said pair of orthogonal carrier signals.

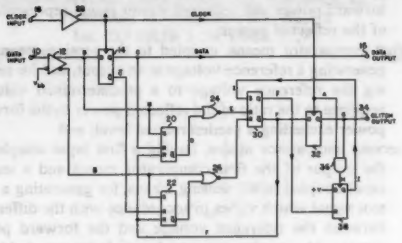
4,353,032
GLITCH DETECTOR

Keith A. Taylor, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Jun. 2, 1980, Ser. No. 155,363
Int. Cl.³ H03K *13/32, 5/26*
U.S. Cl. 328—165 **8 Claims**

1. A circuit for detecting two or more successive transitions of an input digital signal which occur within a clock period, comprising:
- first bistable circuit means for producing a changed logic state in response to the first of said two or more successive transitions of said input signal;

means responsive to both said changed logic state and the second of said two or more successive transitions of said input signal for producing a detection signal; and



second bistable circuit means responsive to said detection signal for producing a changed logic state indicating said detection.

4,353,033

MAGNETIC POLE STRUCTURE OF AN ISOCHRONOUS-CYCLOTRON

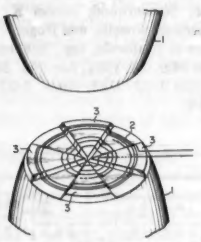
Takashi Karasawa, Fuchu, Japan, assignor to Rikagaku Kenkyusho, Wako, Japan

Filed Feb. 26, 1980, Ser. No. 124,939

Claims priority, application Japan, Mar. 7, 1979, 54-26571

Int. Cl.³ H05H *13/00*

U.S. Cl. 328—234 **11 Claims**



1. An isochronous cyclotron having a magnetic pulse structure comprising a pair of opposing electromagnetic poles for establishing a magnetic field, said poles having opposing surfaces and a single helical winding on each opposing pole surface, the number per turns per unit radial length of each winding being proportional to the radius of the pole at the surface.

4,353,034

FM DETECTING CIRCUIT

Yuji Kimoto, Gunma, Japan, assignor to Sanyo Electric Co., Ltd., Moriguchi and Tokyo Sanyo Electric Co., Ltd., Gunma, both of, Japan

Filed Nov. 16, 1979, Ser. No. 94,768

Claims priority, application Japan, May 18, 1979, 54-61886

Int. Cl.³ H03D *3/00*

U.S. Cl. 329—103 **8 Claims**

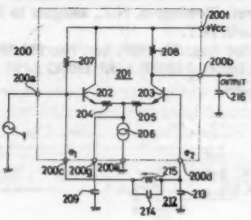
1. An FM detecting circuit for discriminating an FM signal comprising:

differential and detector circuit means including a pair of transistors, each having first, second and third electrodes, wherein said second electrodes are commonly coupled to a reference potential through a constant current source of relatively high impedance;

a discriminator network means for converting the FM signal to two AM signals of substantially opposite phase;

input means for coupling said discriminator network means to said first electrodes, thereby applying said AM signals to the respective first electrodes of said pair of transistors in substantially an opposite phase relationship;

filter means comprising capacitor means connected between the common coupling of said second electrodes and the reference potential, wherein the capacitance of said capacitor means has a value sufficient to pass the carrier signal of said FM signal and does not pass low frequency signals;



means for coupling said third electrodes to a voltage source; and

output means for withdrawing a detected output from said third electrode of at least one of said pair of transistors of said differential and detector circuit means.

4,353,035

CIRCUIT FOR COMPRESSION OR EXPANSION OF AN ELECTRICAL SIGNAL

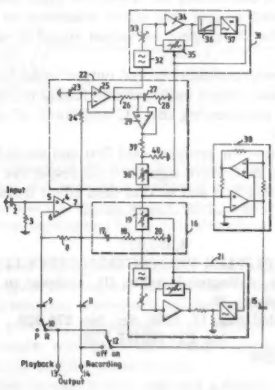
Ernst Schröder, Hanover, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed May 12, 1980, Ser. No. 148,933

Claims priority, application Fed. Rep. of Germany, May 12, 1979, 2919280

Int. Cl.³ H03F *3/68*; H04B *1/64*

U.S. Cl. 330—126 **7 Claims**



1. A circuit for optional automatic dynamic range compression or expansion including subdivision of the frequency spectrum into several frequency selective channels containing adjusting elements for controlling the effective transmission factor and including a combining circuit for the outputs of the channels, wherein a low frequency channel contains means for controlling the transmission factor with respect to frequencies in the upper portion of the frequency band associated with the low frequency channel differently than with respect to frequencies in the lower portion of that band for causing the low frequency channel to present a high frequency emphasis net-

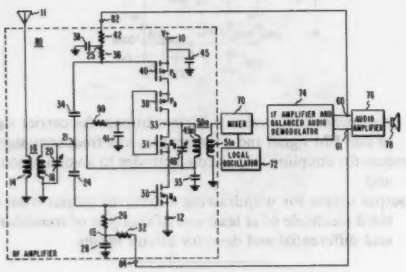
work in the "compression" type of operation and a high frequency de-emphasis network in the "expansion" type of operation.

4,353,036

FIELD EFFECT TRANSISTOR AMPLIFIER WITH VARIABLE GAIN CONTROL

Merle V. Hoover, Flemington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 29, 1980, Ser. No. 182,787
Int. Cl.³ H03F *3/30;* H03G *3/30*
U.S. Cl. 330—264 **11 Claims**



1. An apparatus comprising:

first and second field effect transistors of opposite conductivity type each having respective source, drain, and gate electrodes, said first and second field effect transistors being connected as a complementary symmetry field effect amplifier;

means for applying an operating potential between said source electrodes of said first and second field effect transistors;

input means for applying an input signal to said amplifier;

output means connecting the respective drain electrodes of said first and second field effect transistors to an output terminal for developing an output signal at said output terminal;

detector means responsive to said output signal for developing first and second balanced differential dc control signals each representing the AC amplitude of said output signal; and

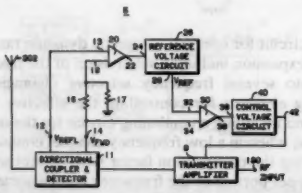
feedback means for applying said first and second balanced differential dc control signals to the respective gate electrodes of said first and second field effect transistors.

4,353,037

AMPLIFIER PROTECTION CIRCUIT

Gene D. Miller, Arlington Heights, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 11, 1980, Ser. No. 176,628
Int. Cl.³ H02H *7/20*
U.S. Cl. 330—298 **7 Claims**



1. A protection circuit, for controlling the power of a transmitter amplifier which produces an output varying in response to a control signal applied thereto, comprising:

sensing means, coupled to the transmitter amplifier, for generating a forward power signal representative of the forward power and reflected power signal representative of the reflected power;

first comparator means, coupled to the sensing means for generating a reference voltage at an output, and for reducing the reference voltage to a predetermined value in response to the ratio of the reflected power to the forward power exceeding a predetermined level; and

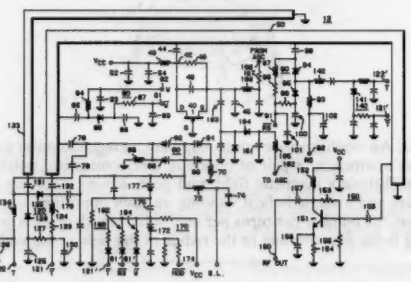
second comparator means, having a first input coupled to the output of the first comparator means and a second input coupled to the sensing means, for generating a control signal which varies in accordance with the difference between the reference voltage and the forward power signal, said second comparator means being coupled to the transmitter amplifier for applying said control signal thereto to vary the power developed by the transmitter amplifier.

4,353,038

WIDEBAND, SYNTHESIZER SWITCHED ELEMENT VOLTAGE CONTROLLED OSCILLATOR

Richard A. Rose, Streamwood; James K. Gehrke, Palatine; Terrance J. Goedken, Roselle, and Roger Vilmur, Palatine, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 31, 1981, Ser. No. 249,535
Int. Cl.³ H03B *5/12, 5/18;* H03C *3/22;* H03L *7/16*
U.S. Cl. 331—36 C **10 Claims**



1. A wideband switched element voltage controlled oscillator, including in combination:

oscillator means including capacitive and inductive elements forming a tank circuit;

means including at least one varactor tuning element coupled to said tank circuit for changing the frequency of said oscillator means within a predetermined band of frequencies;

a plurality of pin diode frequency shift networks selectively switchable into said tank circuit for changing the frequency of said oscillator means in selectable discrete binary steps over a range of frequencies substantially greater than said predetermined band of frequencies; and

means to prevent parasitic oscillation modes in said oscillator means when said binary frequency shift networks are in a switched off, inactuated mode.

4,353,039

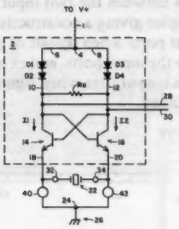
MONOLITHIC ASTABLE MULTIVIBRATOR CIRCUIT

Christopher R. Huntley, Burnaby, Canada, assignor to GTE Automatic Electric Laboratories, Inc., Northlake, Ill.

Filed May 15, 1980, Ser. No. 150,371

Int. Cl.³ H03B *5/36;* **H03K** *3/282*

U.S. Cl. 331—113 R **5 Claims**



1. An oscillator in which the loop gain is well controlled comprising:

a source of direct current power having a positive and a ground terminal;

first and second transistors having base, emitter and collector electrodes, the base of the first transistor being directly connected to the collector of the second transistor, and the base of the second transistor being directly connected to the collector of the first transistor;

a current source having first and second input terminals arranged for connection to the emitters of said first and second transistors, respectively, and having a third terminal connected to said ground terminal;

a frequency determining component having a pair of terminals the first one of the pair being connected to the emitter of said first transistor and the other terminal of the pair being connected to the emitter of said second transistor; and

a collector load impedance comprising

a first pair of diodes, the first diode of the pair having its anode connected to said positive terminal, and the second diode having its anode connected to the cathode of said first diode and its cathode connected to the collector of said first transistor;

a second pair of diodes, the first diode of the second pair having its anode connected to said positive terminal, and the second diode of the second pair having its anode connected to the cathode of said first diode of said second pair and its cathode connected to the collector of said second transistor; and

a resistor having one end thereof connected to the collector of said first transistor and the other end connected to the collector of said second transistor, said resistor performing the function of limiting the amplitude of oscillation and the value of said resistor being selected to obtain the desired amplitude.

4,353,040

MULTI-LAYER MODULE WITH CONSTANT CHARACTERISTIC IMPEDANCE

Horst Krumm, Steinenbronn; Helmut Schettler, Dettenhausen; Rainer Stahl, Schoenaich, and Rainer Zühlke, Leonberg, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 2, 1980, Ser. No. 192,972

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1979, 2940593

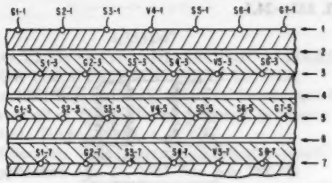
Int. Cl.³ H01P *3/00*

U.S. Cl. 333—1 **7 Claims**

1. A multi-layer module with several conductor line planes extending parallel to each other, conductor lines of adjacent superposed planes being orthogonally aligned to each other, the conductor lines in each plane comprising:

two signal lines being arranged between a ground line and a voltage supply line;

an additional two signal lines arranged between said voltage supply line and an additional ground line;



other conductor lines arranged in the same sequence of ground line, two signal lines. voltage supply line, and two additional signal lines, consecutively repeated in sequence; and

the spacing between each said signal line and its adjacent ground or voltage supply line being identical in each case.

4,353,041

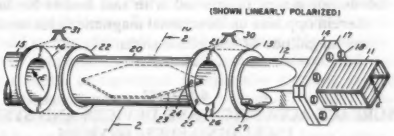
SELECTABLE LINEAR OR CIRCULAR POLARIZATION NETWORK

Lawrence G. Bryans, Mountain View, and Loren R. Murchison, Santa Clara, both of Calif., assignors to Ford Aerospace & Communications Corp., Detroit, Mich.

Continuation-in-part of Ser. No. 100,675, Dec. 5, 1979, abandoned. This application Nov. 24, 1980, Ser. No. 209,804

Int. Cl.³ H01P *1/165, 1/17*

U.S. Cl. 333—21 A **6 Claims**



1. A polarization network for selectively converting between linear and circular polarization comprising:

a rectangular waveguide means having a generally rectangular cross section and being twistable about its longitudinal axis;

a transducer waveguide means for interfacing between said rectangular waveguide means and circular waveguide, said transducer waveguide means having a first end having a generally rectangular cross section coupled to said rectangular waveguide means and a second end having a generally circular cross section;

a polarizer having a third end and a fourth end, said third end being coupled to said second end, said polarizer being adaptable to change electromagnetic radiation between linear and circular polarization; and

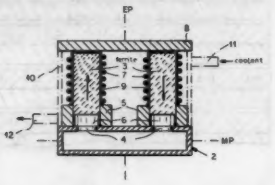
a first coupling means to permit relative rotation between said transducer waveguide means and said polarizer to any of three rotational positions: a first position permitting a linearly polarized signal to remain linearly polarized after passing through said polarizer, a second position converting between a linearly polarized signal and a right hand circularly polarized signal, and a third position converting between a linearly polarized signal and a left hand circularly polarized signal.

4,353,042

DIFFERENTIAL PHASE SHIFTER FOR A WAVEGUIDE CARRYING HIGH-POWER MICROWAVES

Enzo C. D'Oro, Monza, and Girolamo Ocera, Palermo, both of Italy, assignors to Italtel S.p.A., Milan, Italy

Filed Dec. 16, 1980, Ser. No. 216,905
Claims priority, application Italy, Dec. 18, 1979, 28145 A/79
Int. Cl.³ H01P 1/19
U.S. Cl. 333—24.1 8 Claims



1. In a waveguide of rectangular cross-section with two major surfaces defined by conductive sidewalls paralleling a magnetic plane in which a propagating electromagnetic wave gives rise to two counterrotating magnetic fields on opposite sides of an electric plane perpendicular thereto,

the combination therewith of:

at least one pair of ferrite bodies rising externally of said waveguide from at least one of said sidewalls on opposite sides of said electric plane, said one of said sidewalls being provided with apertures confronting proximal end faces of said bodies for enabling said counterrotating fields to induce corresponding fields traveling outward in said bodies and returning after reflection at remote end faces thereof to said waveguide with identical phase shifts experienced in said bodies, said apertures being surrounded on the outer surface of said one of said sidewalls by ferromagnetic collars respectively embracing said bodies at said proximal end faces thereof; and

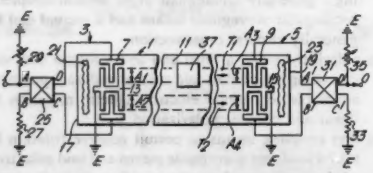
conductor means juxtaposed with said bodies for inducing therein opposite unidirectional magnetic fields controlling the magnitude of said phase shifts.

4,353,043

SURFACE ACOUSTIC WAVE DEVICES AND SYSTEMS INCLUDING SUCH DEVICES

David J. Gunton, Malvern, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Oct. 15, 1980, Ser. No. 197,370
Claims priority, application United Kingdom, Oct. 22, 1979, 7936587
Int. Cl.³ H03H 9/64, 9/68, 9/72
U.S. Cl. 333—151 13 Claims



1. A surface acoustic wave device comprising:

a substrate having two surface acoustic wave propagation tracks;

input means, at one end of the two tracks, including at least one input transducer, for launching surface acoustic waves on each track, in response to an electrical input signal;

two output transducers, one at the end of each track;

an output coupler having two input ports and two output ports, the two input ports being arranged to couple the two tracks; and,

phase differentiation means for providing a non-zero phase difference ϕ between the two input ports of the coupler;

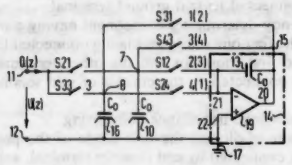
the output coupler giving a constructive output signal at one of the output ports when signals of phase difference ϕ are presented to the input ports, and an effectively null output signal at this output port when signals of phase difference 3ϕ are presented.

4,353,044

SWITCHED-CAPACITOR FILTER CIRCUIT HAVING AT LEAST ONE SIMULATED INDUCTOR AND HAVING A RESONANCE FREQUENCY WHICH IS ONE-SIXTH OF THE SAMPLING FREQUENCY

Josef Nossek, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 7, 1981, Ser. No. 223,033
Claims priority, application Fed. Rep. of Germany, Jan. 21, 1980, 3002041
Int. Cl.³ H03H 19/00, 11/48, 17/02
U.S. Cl. 333—173 14 Claims



1. A switched-capacitor filter circuit having at least one simulated inductance, said filter circuit operating as the equivalent of a parallel resonance circuit having an inductance L and a capacitance C and having a resonance frequency which is one-sixth of the sampling frequency for the circuit, said circuit comprising:

first and second input terminals;

a first capacitor;

a means for connecting said first capacitor across said input terminals during a first clock phase;

a second capacitor;

an inverting integration circuit having a feedback capacitor and having an output;

a means for connecting said second capacitor to the output of said inverting integration circuit during said first clock phase;

a means for transferring a charge from said first capacitor to aid feedback capacitor during a second clock phase;

a means for charging said first capacitor by the output of the integration circuit during a third clock phase;

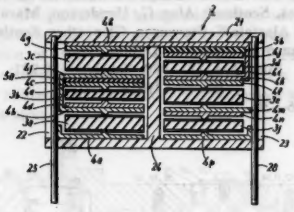
a means for connecting said second capacitor across said input terminals during said third clock phase; and

a means for transferring a charge from said second capacitor to said feedback capacitor during a fourth clock phase, said first, second, third and fourth clock phases operating in cyclical fashion with non-overlapping duty times at the same clock frequency.

4,353,045
LADDER TYPE FILTER

Toshiharu Matsui, Hakui, and Sasuga Kakehi, Kanazawa, both of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Oct. 1, 1980, Ser. No. 193,184
Claims priority, application Japan, Oct. 9, 1979, 54/139990[U]
Int. Cl.³ H03H 9/05, 9/10, 9/60
U.S. Cl. 333—190 13 Claims

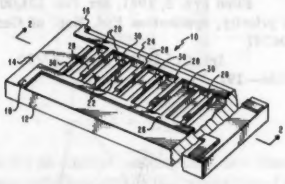


1. A ladder type filter, comprising:
a casing having a box-like shape and having a top portion, a bottom portion and at least one side portion;
first and second sets of plate-like piezoelectric resonators, each of the resonators in a said set of resonators being stacked with respect to one another and housed in said casing;
said casing having at least one opening on the side portion and a partitioning member therein for partitioning the inside of said casing into first and second compartments;
said first and second sets of piezoelectric resonators being located in said first and second compartments, respectively, each said set of resonators forming a column of resonators in its respective said compartment; and
blocking means at least partially blocking said at least one opening for preventing said first and second sets of piezoelectric resonators from slipping out of said casing.

4,353,046
SURFACE ACOUSTIC WAVE DEVICE WITH REFLECTORS

Clinton S. Hartmann, Dallas, Tex., assignor to R F Monolithics, Inc., Dallas, Tex.

Filed Nov. 4, 1980, Ser. No. 204,064
Int. Cl.³ H03H 9/25, 9/64, 9/145
U.S. Cl. 333—194 19 Claims

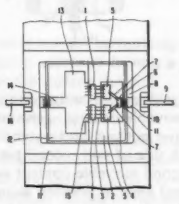


1. A surface wave device comprising in combination:
substrate means having at least a surface layer of piezoelectric material;
acoustic surface wave transducer means disposed on the piezoelectric surface of the substrate means and being operable to convert between an electrical signal and acoustic surface waves propagating on the piezoelectric surface of the substrate means; and
means other than transducer means defining reflective structures on the device responsive to acoustic surface waves wherein the means defining reflective structures causes reflections of acoustic surface waves in the portion of the piezoelectric surface over which the transducer means is disposed, and
wherein the acoustic surface wave transducer means comprises opposing pads have alternating groups of electrodes in interdigitated relationship to define a split electrode transducer and the means defining reflective structures forms grooves in the piezoelectric surface between at least one pair of the electrodes comprising a group.

4,353,047
(1−X)BAO.XTIO$_2$ SYSTEM DIELECTRIC MATERIAL FOR USE IN A MICROWAVE DEVICE

Tsutomu Noguchi; Yuji Kajiwara; Masanori Suzuki, and Hideo Takamizawa, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Division of Ser. No. 116,413, Jan. 29, 1980, abandoned. This application Apr. 28, 1981, Ser. No. 258,355
Claims priority, application Japan, Jan. 29, 1979, 54-8967
Int. Cl.³ H01P 1/00; C04B 35/49
U.S. Cl. 333—247 8 Claims



1. A transistor device having an internal impedance matching circuit, comprising a conductor block, a transistor chip having input, output and common electrodes, said common electrode of said transistor chip being connected to said conductor block, a sheet of dielectric material directly mounted on said conductor block, an electrode layer formed on said dielectric material and electrically connected to said input electrode and/or said output electrode of said transistor chip, said electrode layer cooperating with said dielectric material and said conductor block to constitute a capacitive element in said internal impedance matching circuit, a conductive layer electrically to said electrode layer and separated from said conductor block by an insulating layer, said conductive layer cooperating with said insulating layer and said conductor block to constitute a strip line, a lead wire connected to said conductive layer, and a package housing encapsulating at least said transistor chip and said sheet of dielectric material, said dielectric material having as a principal constituent $(1-x)BaO.xTiO_2$, where the parameter x falls in the range of $0.7 \leqq x \leqq 0.95$, and containing manganese in an amount of 0.035 to 0.07% by weight per amount of said principal constituent and zirconium in an amount of 0.37 to 2.6% by weight per amount of said principal constituent.

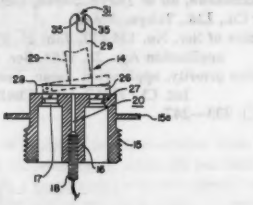
4,353,048
GAS-FILLED ENVELOPE ENCLOSED HIGH VOLTAGE RELAY

Victor E. DeLucia, 11846 Mississippi Ave., Los Angeles, Calif. 90025

Filed Sep. 25, 1981, Ser. No. 305,453
Int. Cl.³ H01H 1/66
U.S. Cl. 335—151 2 Claims

1. In a relay which includes an envelope having a generally tubular configuration, a first electrically conductive contact pin extending radially into the envelope, a first arcuately-shaped movable contact extending transversely to the axis of said first contact pin, electrically conductive means affixed to an intermediate part of said movable contact and pivotally

mounted on said first contact pin to cause said movable contact to be electrically connected to said first contact pin, and a pair of further electrically conductive pins extending radially into said envelope on each side of said first pin to be selectively engaged by the ends of said movable contact as the movable contact is pivotally moved between a first and second angular position, and magnetic armature means mounted in said envelope and mechanically coupled to said movable contact to turn said movable contact selectively about the axis of said first contact pin between said first and second angular positions, a second electrically conductive contact pin extending radially into said envelope diametrically opposite said first pin and coaxially therewith, a second arcuate movable contact pivotally mounted on said second contact pin at an intermediate part of said arcuate movable contact, a second pair of further electrically conductive contact pins extending radially into said envelope on each side of said second pin to be engaged selectively by said second movable contact as it is turned between a first and a second angular position about the common axis of said first and second contact pins, said envelope being filled with a high pressure gas to prevent ionization between said contacts and to provide cooling therefor; an insulating rod formed of glass-filled epoxy resin interconnecting said first and second movable contacts, said rod extending parallel to said common axis but displaced therefrom, and said magnetic armature being mechanically coupled to said rod.

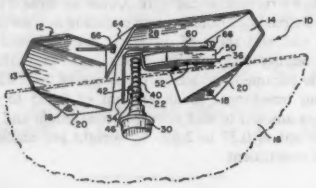


4,353,049

MAGNETICALLY DETENTED ROTARY SWITCH

Irwin S. Lerner, Orange, and Melvin Spat, Stamford, both of Conn., assignors to Lerner Laboratories, Inc., New Haven, Conn.

Filed Aug. 27, 1980, Ser. No. 181,707
Int. Cl.³ H01H *9/20, 5/02*
U.S. Cl. 335—205 **12 Claims**



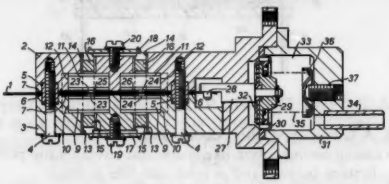
1. A switch comprising:
a housing having two confronting magnetizable walls;
a shaft secured to said housing for rotation relative thereto;
means at one end of said shaft for effecting manual rotation thereof;
a magnetic member; means for securing said magnetic member to said shaft for rotation therewith between said confronting walls, whereby said magnetic member is in magnetic detented contact with one of said magnetizable walls when said shaft is rotated to a first position and in magnetic detented contact with the confronting magnetizable wall when said shaft is rotated to a second position; and
a magnetic reed switch supported in said housing in the vicinity of said one magnetizable wall, whereby said switch is activated when said shaft is in said first position and deactivated when said shaft is in said second position.

4,353,050

DISPLACEMENT MEASURING TRANSDUCER

Alan Pelczyk, Hockenheim, Fed. Rep. of Germany; Robert F. Purssell, Plymouth, England; Alfred J. Woollard, Hurst, Tex.; Albert L. Fowler, Kirkcaldy, Scotland; David M. Walker, Glenrothes, Scotland; Alan G. Henderson, Markinch, Scotland, and Alastair K. Stevenson, Glenrothes, Scotland, assignors to Ranco Incorporated, Dublin, Ohio

Filed Jun. 13, 1980, Ser. No. 159,291
Int. Cl.³ H01F *21/02*
U.S. Cl. 336—30 **15 Claims**



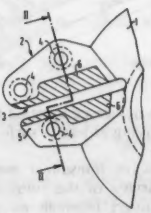
1. A displacement-measuring transducer comprising a linearly displaceable laminar member mounted for sliding movement within a metal sleeve located in a housing, the laminar member having two apertures spaced apart in the direction of displacement of the member, and at least two electromagnetic pick-up devices cooperating with said apertures and spaced apart in the said direction, the metal sleeve acting as an electromagnetic shield and having apertures therein at the positions of the respective pick-up devices, so that upon displacement of the laminar member the displacement of the two apertures of the laminar member relative to the respective pick-up devices with which they cooperate results in respective electrical outputs from the pick-up devices which can be utilized to provide a measurement of the displacement of the laminar member relative to the housing.

4,353,051

COIL FORM FOR ELECTRIC COILS

Roger Wille, Oostkamp, Belgium, and Gerhard Meindl, Alling, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Feb. 3, 1981, Ser. No. 231,007
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1980, 3004747
Int. Cl.³ H01F *15/10, 27/30*
U.S. Cl. 336—192 **2 Claims**



1. Coil form for electric coils comprising a coil core having end flanges defining a winding space therebetween, one of said end flanges being formed with bars extending transversely to said coil core and having elongated rectilinear wire guide slots

formed therein and open at one end thereof, said bars being rounded in direction transverse to longitudinal direction of said slots at a transition location between said slots and said winding space, said bars carrying contact pin terminals for connection with wires wound on the coilform and having a part thereof formed as a wire catching beak for forcibly guiding into the respective wire guide slots winding wires which are to be connected by soldering to said contact pin terminals, said bars having surfaces defining said wire guide slots, said surfaces being inclined in direction of said contact pin terminals, said wire guide slots being widened in vicinity of said contact pin terminals and in a direction transverse to longitudinal direction of said slots so that crossover locations of the winding wires are shifted out of a zone wherein the winding wires are soldered to the contact pin terminals and into said wire guide slots.

4,353,052

IRON CORE WITH PLANISHED CLAMPING SURFACES FOR ELECTRIC MACHINE, SUCH AS TRANSFORMER, CHOKE, VOLTAGE STABILIZER OR THE LIKE

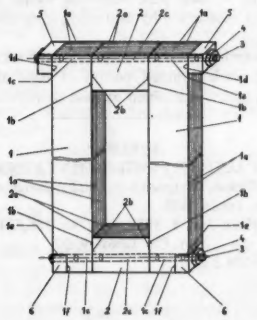
Hugo-Werner Geschka, Düsseldorf, Fed. Rep. of Germany, assignor to E. Blum GmbH & Co., Vaihingen, Fed. Rep. of Germany

Filed Jun. 21, 1979, Ser. No. 50,791

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1978, 2827179

Int. Cl.³ H01F *27/26*

U.S. Cl. 336—210 **4 Claims**



1. Iron core for an electric machine such as a transformer, a choke, a voltage stabilizer and the like, assembled of a plurality of individual parallelipipedal core parts formed of laminated layers mutually held together, the core parts having mutually abutting joints formed with smoothly finished surfaces free of any metallic connection between the individual layers, comprising clamping means applied to a planished clamping surface at outer contours of the core and extending transversely to the laminated layers, clamping elements clamping said clamping means so as to hold the individual core parts together, said clamping means being means for distributing clamping force at least approximately uniformly to the individual laminated layers between said clamping means and the respective planished clamping surface.

4,353,053

ROTARY VARIABLE RESISTOR

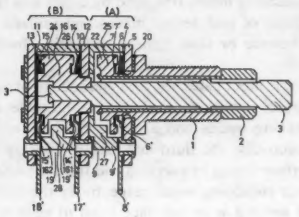
Hiroshi Matsui; Matsuo Nishioka, both of Hirakata, and Takashi Onizawa, Sakai, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Oct. 14, 1980, Ser. No. 196,566

Claims priority, application Japan, Oct. 19, 1979, 54-145527[U]

Int. Cl.³ H01C *10/32*

U.S. Cl. 338—184 **3 Claims**



1. In a rotary variable resistor comprising:
at least one insulation substrate having a partial-ring form registor layer on the surface thereof,
an operational shaft rotatably supported at a central portion of said insulation substrate,
a brush supporter in the form of a rotational body disposed substantially at one tip of said operational shaft and holding a brush rotatably sliding on said resistor layer, and
a cover case of molded insulation material covering said brush and said brush supporter,
the improvement wherein:
a side of each such insulation substrate has lead terminals;
said cover case is constituted by a peripheral side wall with two ends, defining an internal space which is open at both ends without any intervening partition wall, said peripheral side wall having an internal surface; and
a protrusion for stopping the rotationalal movement of said brush supporter is disposed on said inner surface of said peripheral side wall of said cover case on the side of said at least one insulation substrate having said lead terminals.

4,353,054

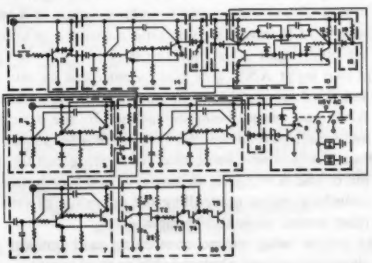
STOP SIGN WATCHER, A DEVICE FOR MONITORING VEHICLES AT FULL STOP SIGN INTERSECTIONS

Lawrence J. King, and Irene T. King, both of 27 Cambridge Dr., Smithtown, L. I., N.Y. 11787

Continuation-in-part of Ser. No. 773,471, Mar. 2, 1977, abandoned. This application Aug. 6, 1979, Ser. No. 63,839

Int. Cl.³ G08G *1/10*

U.S. Cl. 340—31 C **7 Claims**



1. A ground based detection device, capable of generating an electrical pulse whenever a monitored vehicle fails to essentially make a "Full Stop" at roadway intersections where "Full

Stop" signs are posted; said ground based device comprising means for counting the offending vehicles, audible alarm means actuable in response to the offending vehicle, and control means for controlling the operation of photographic equipment for taking a picture of the offending vehicle, said ground based device further comprising: a source of electrical energy for the operation of the device, a single sensor means laid across a single lane for detecting the passage of the front and rear wheels of the monitored vehicle and producing a first and second output pulse respectively, a first monostable multivibrator switching means triggered by either said first or second output pulse of said sensor means and utilized for blocking contact bounce or false signals originating from said sensor means,

five single input gates, the first and second of which serve as interface inputs to said first monostable multivibrator switching means and a single bistable switching means respectively, the third and fourth input gates serving as interface inputs to a second and third monostable multivibrator switching means respectively the fifth single input gate serving as an interface input to an output switching relay means, said second input gate coupled to the output of said first monostable switching means;

said single bistable switching means controlled directly by said first monostable switching means through said second single input gate; said third and fourth single input gates coupled to the inputs of said second and third monostable switching means respectively, first and second output of said bistable switching means controlling the triggering of said second and third monostable switching means respectively, via said third and fourth input gates, said second monostable switching means triggered by said first output of said single bistable switching means via said third input gate whenever said first output pulse of said sensor means is produced in response to the vehicle front wheel passage over said sensor means,

a two input AND gate having one input coupled to the output or metastable state of said second monostable switching means; the time period of said metastable state of said second monostable switching means having limits which established a partial gate enablement time and constitutes a Full Stop Period, this period being adjusted by variable resistance in said second monostable switching means,

said third monostable switching means triggered by said second output of said bistable switching means via said fourth input gate whenever the said second output pulse of said sensor means is produced in response to the vehicle rear wheel passage over said sensor means, the output or metastable state of said third monostable switching means having a period less than the period of the metastable state of said second monostable switching means, said output of said third monostable switching means being coupled to the other input of said AND gate,

said two input AND gate being controlled by said second and third monostable switching means, the period of the AND gate output being determined by the period of the metastable state of said third monostable switching means,

a fourth monostable switching means triggered by the output of said AND gate; an output of said fourth monostable switching means controlling the operation of said output relay means via said fifth input gate,

said output relay means controlling said counter means, alarm means, and photographic control means,

an independent time controlled pulse generator means controlling the quiescent state of said single bistable switching means.

4,353,055

ALARMING APPARATUS OF VEHICLE

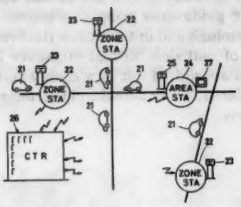
Shiro Kawakatsu, and Toshikazu Kawasaki, both of Suita, Japan, assignors to Daihatsu Motor Co., Ltd., Ikeda, Japan

Filed May 14, 1980, Ser. No. 149,717

Claims priority, application Japan, May 24, 1979, 54-69748[U]; Aug. 15, 1979, 54-113166[U]

Int. Cl.³ G08B 29/00

U.S. Cl. 340—52 D **25 Claims**



1. An alarming apparatus in a vehicle including an auxiliary device for implementing an auxiliary function of said vehicle, comprising:

first alarming means provided to raise an alarm inside said vehicle,

second alarming means provided to raise an alarm outside said vehicle,

using state selecting means for selecting a using state or a non-using state of said vehicle,

state detecting means for detecting a predetermined undesired state of said auxiliary device for implementing an auxiliary function of said vehicle, said predetermined undesired state of said device being undesired in said non-using state of said vehicle,

first control means responsive to said state detecting means and said using state selecting means for enabling said first alarming means when said predetermined undesired state is detected by said state detecting means and said non-using state is selected by said using state selecting means, and

second control means for enabling said second alarming means a predetermined period of time after said first alarming means is enabled by said first control means.

4,353,056

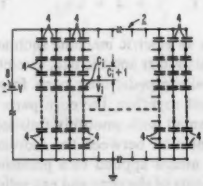
CAPACITIVE FINGERPRINT SENSOR

Constantine Tsikos, Pennsauken, N.J., assignor to Siemens Corporation, Iselin, N.J.

Filed Jun. 5, 1980, Ser. No. 156,571

Int. Cl.³ G06K 9/00

U.S. Cl. 340—146.3 E **4 Claims**



1. A fingerprint sensor comprising in combination:

(a) a sensing member having a sensing surface for pressing a finger thereto;

(b) sensing means for sensing the ridges and valleys of the skin of said finger, said sensing means containing a multitude of

capacitors located in said sensing member, the size of said capacitors being less than the size of said valleys; and

(c) said sensing member containing a multitude of metal plates, each forming a first electrode of said multitude of capacitors, whereby the capacitances of respective ones of said capacitors are locally changed in accordance with said ridges and valleys when said finger is pressed against said surface.

4,353,057

SYSTEM FOR DIGITIZING TRANSIENT SIGNALS

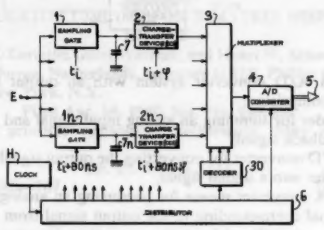
Jean-Marie Bernet, and Gabriel Lejeune, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jun. 8, 1979, Ser. No. 46,818

Claims priority, application France, Jun. 13, 1978, 78 17621

Int. Cl.³ H03K *13/02*

U.S. Cl. 340—347 SH **7 Claims**



1. A system for digitizing transient signals appearing at an input terminal, comprising:

a plurality of sampling gates connected in parallel to said input terminal;

a plurality of charge-transfer devices respectively connected to said sampling gates, each of said devices including a multiplicity of cells, a multiplicity of first switches for successively loading associated cells with incoming signal samples from the respective sampling gate and a multiplicity of second switches for successively reading out the contents of associated cells in the order of their loading to an output circuit common to all said cells, each of said first switches being paired for joint operation with a respective second switch associated with a different cell;

an analog-digital converter;

multiplexer means inserted between said charge-transfer devices and said converter for cyclically connecting the output circuits of all said devices to said converter until the contents of the cells of all said devices have been read out;

utilization means connected to said converter, and

timing means connected to said sampling gates, said charge-transfer devices and said multiplexer means for briefly opening said sampling gates in cyclic succession at a relatively fast clock-pulse rate and for jointly operating said first and second switches of the respective charge-transfer devices in synchronism therewith during a first operational phase, said timing means being modified upon the loading of the cells of all said devices for thereupon jointly operating said first and second switch means of said charge-transfer devices in cyclic succession and in synchronism with said multiplexer means at a relatively slow clock-pulse rate for successively reading out the contents of all cells to said converter during a second operational phase, said output circuits being grounded during said first operational phase for clearing each cell via the associated second switch prior to loading same via the associated first switch, the connections between said sampling gates and said charge-transfer devices being blocked during said second operational phase.

4,353,058

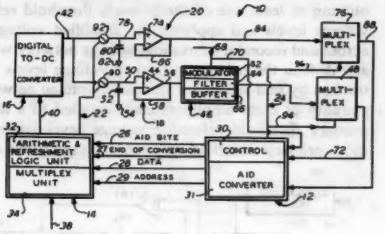
DIGITAL TO ANALOG CONVERTER HAVING AN ANALOG TO DIGITAL CONVERTER PORTION FOR AN AC OPERATION OR A DC OPERATION

Sidney M. Sacks, Monsey, N.Y., assignor to The Singer Company, Little Falls, N.J.

Filed May 9, 1980, Ser. No. 148,118

Int. Cl.³ H03K *13/02*

U.S. Cl. 340—347 CC **2 Claims**



1. A digital to analog converter responsive to input digital command signals and including error compensation and being adapted to employ an analog to digital converter having an ac or dc mode of operation, comprising:

an arithmetic logic unit adapted to connect to the analog to digital converter, having a first input for receiving digital correction signals from the analog to digital converter for error compensation, and having a second input for receiving the input digital command signals,

a digital to dc converter portion coupled to the arithmetic logic unit, having an input for receiving corrected input digital command signals from the arithmetic logic unit, and

a multiplex circuit means coupled to the digital to dc converter portion and adapted to connect to the analog to digital converter, wherein the multiplex circuit means includes:

an ac multiplex circuit means having a plurality of ac channels and an ac multiplex unit for ac operation, and each channel of the ac multiplex circuit means includes a sample and hold amplifier, a capacitor coupled to the sample and hold amplifier, and a modulator assembly coupled to the sample and hold amplifier and coupled to the ac multiplex unit, said modulator assembly including a modular section and a filter section and a buffer section, and

a dc multiplex circuit means having a plurality of dc channels and a dc multiplex unit for dc operation, and each channel of the dc multiplex circuit means includes a sample and hold amplifier coupled to the dc multiplex unit, and a capacitor coupled to the sample and hold amplifier, and

said ac multiplex unit and said dc multiplex unit each being arranged to couple a selected channel of the ac multiplex circuit means or a selected channel of the dc multiplex circuit means to the analog to digital converter.

4,353,059

MULTITHRESHOLD CONVERTER UTILIZING REFERENCE TRACKING AMPLIFIERS

Rimantas L. Vaitkus, Phoenix, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed May 16, 1980, Ser. No. 150,538

Int. Cl.³ H03K *13/175*

U.S. Cl. 340—347 AD **1 Claim**

1. A multithreshold A/D converter having primary and secondary quantizing stages comprising:

primary threshold voltage network means for providing primary threshold reference voltage levels;

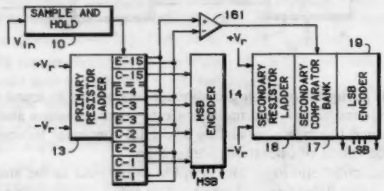
a plurality of primary comparators each coupled to a differ-

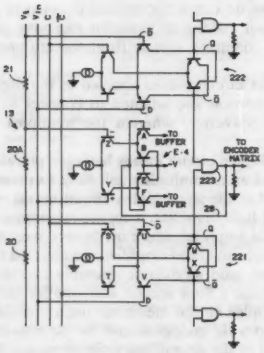
ent primary voltage level of said primary threshold voltage network means for comparing a given analog input signal to the primary threshold reference voltage levels and supplying outputs encoded to provide digital signals representative of the most significant bits (MSB) of the digital equivalent of the analog input signal;

secondary threshold voltge network means for providing secondary threshold reference voltage levels;

reference tracking amplifier means coupled to said primary and secondary threshold voltage network means for amplifying at least one of the primary threshold reference voltage levels and applying the amplified voltage level across said secondary threshold voltage network whereby any drift in the primary reference voltage levels will be tracked by said secondary threshold voltage network;

a plurality of error amplifiers each coupled to a different primary threshold reference voltage level intermediate those primary threshold reference voltage levels utilized





by adjacent pairs of said plurality of primary comparators, a selected one of said error amplifiers outputting a signal differential of said intermediate threshold reference voltage level and said given analog input signal;

a plurality of secondary comparators each coupled to a different secondary voltage level of said secondary threshold voltage network means and to said plurality of error amplifiers for comparing the signal differential from the selected error amplifier to the secondary threshold reference voltage levels and supplying outputs encoded to provide digital signals representative of the least significant bits (LSB) of the digital equivalent of the analog input signal; and

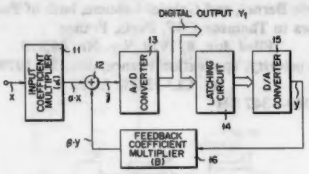
said reference tracking amplifier means and said plurality of error amplifiers being matched by formation of monolithically fabricated integrated circuits whereby said reference tracking amplifier means and said plurality of error amplifiers are identical to each other and track under conditions imposed by operation and environment.

4,353,060

ANALOG TO DIGITAL CONVERTER SYSTEM WITH AN OUTPUT STABILIZING CIRCUIT

Kenjiro Endoh; Yoshiyuki Ishizawa; Masanori Tanaka, all of Yokohama, and Koji Iwasaki, Gotenba, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 1, 1980, Ser. No. 165,037
Claims priority, application Japan, Jul. 13, 1979, 54-88769
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 AD **8 Claims**



1. An A/D converter system with an output stabilizing circuit comprising:

an adder for summing an analog input signal and a positive feedback signal;

an A/D converter for converting the output signal from said adder into a digital signal;

a D/A converter means for producing an analog feedback signal corresponding to the output signal from said A/D converter after at least one converting operation period of said A/D converter, said D/A converter means including a D/A converter and a signal delay means; and

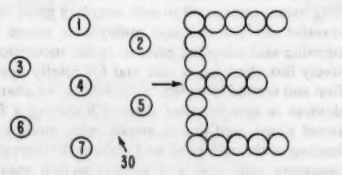
a feedback coefficient multiplier for producing said positive feedback signal obtained by multiplying a given feedback coefficient valued at less than 1 by said analog feedback signal and an input coefficient multiplier which multiplies a first analog input signal by a given input coefficient and produces said first analog input signal as a second analog input signal to be supplied to said adder, and the sum of said input coefficient and said given feedback coefficient is 1.

4,353,061

APPARATUS AND METHOD FOR PROVIDING ELECTRON BEAM PATTERNS USING EXPANDED BEAM ARRAY

Vernon D. Beck, Ridgefield, Conn., assignor to International Business Machines, Armonk, N.Y.

Filed Dec. 7, 1979, Ser. No. 101,337
Int. Cl.³ G06F *3/14*
U.S. Cl. 340—720 **16 Claims**



1. An apparatus for forming a scanned electron beam pattern which substantially avoids or reduces mutual beam repulsion, beam intermodulation, and grid mounting problems, comprising:

electron beam emitter means (40, 42) for emitting a plurality of electron beams which are disposed in relation to each other so as to form an array of beams,

means for deflecting (72) each of said beams through a plu-

rality of spaced apart, parallel scan lines, each said scan line being comprised of a plurality of successively disposed scanning positions,

said array of beams being such that at any one time each beam lies on a different scan line and having a geometric shape such that a first line connecting the two points on the outline of said shape which are spaced furthest from each other and a second line perpendicular to and bisecting said first line and connecting two other points on said outline, are of comparable length, and

means for selectively controlling each of said beams (80–120) at each of said scanning positions to effect said pattern.

4,353,062
MODULATOR CIRCUIT FOR A MATRIX DISPLAY DEVICE

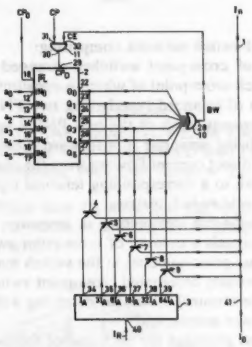
Jean H. J. Lorteije; Geert Warrink, and Henri W. Schneider, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 14, 1980, Ser. No. 140,406

Claims priority, application Netherlands, May 4, 1979, 7903515

Int. Cl.³ G09G 3/22

U.S. Cl. 340—767 **14 Claims**



1. A modulator circuit for a matrix display device having k columns and r rows, comprising a row selection means for sequentially electrically exciting r rows, and k column excitation means for exciting the k column conductors respectively, each column excitation means comprising a counting circuit having N counting elements and a current source circuit, means for adjusting said counting means, shortly prior to the selection of a next row to initial positions corresponding to the (display) picture information applied to said modulator circuit for the corresponding elements of this row, means for applying a number of counting pulses to all of said counting means during a row selection period, this number not exceeding 2^N, each of said counting means counting by means of the counting pulses produced by said means for applying a number of counting pulses, from the preset initial position until a fixed final position has been reached to determine the pulse width of the excitation pulse applied to a picture element corresponding with that counting means and the current source circuit determining the maximum amplitude of this excitation pulse, characterized in that for the duration of the excitation pulse the current source circuit for a column applies a finite current which varies with time, to the picture element selected in the column, this current always corresponding with the number of used, consecutive positions of the counting circuit.

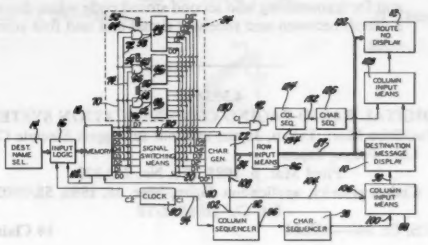
4,353,063
BUS DESTINATION SIGN WITH PROGRAMMED DESTINATION NAME AND MANUALLY SETTABLE ROUTE NUMBERS FOR COMBINED DISPLAY

Thomas A. Devlin, Waterford, Mich., assignor to Vultron, Inc., Waterford, Mich.

Filed Jul. 30, 1980, Ser. No. 173,787

Int. Cl.³ G09G 3/20

U.S. Cl. 340—798 **8 Claims**



1. In a sign of the type comprising an alphanumeric display device,

a memory for storing a multiplicity of primary word signals each constituting one part of a message,

means including a first manually actuable selector means coupled with said memory for selectively accessing any one said primary word signals,

a character generator operatively coupled with said display device and responsive to a word signal for producing a character generator signal to control the energization of said display device to display a word corresponding to the word signal,

said sign being characterized in that it comprises a secondary word selector including a second manually actuable selector means for producing a selected one of a multiplicity of secondary word signals each constituting another part of a message,

said secondary word selector being coupled with said character generator for causing the display device to display a message including a selected secondary word,

and control means including switching means operatively coupled between the memory and the the character generator for causing the display device to display,

said control means including additional means responsive to said memory for actuating the switching means and for enabling the second manually actuable selector means to cause the display device to display the selected secondary word with the selected primary word.

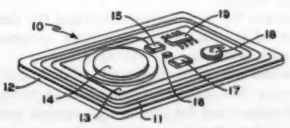
4,353,064
BATTERY OPERATED ACCESS CONTROL CARD

Thomas A. Stamm, Chicago, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 14, 1981, Ser. No. 225,087

Int. Cl.³ H04Q 9/00

U.S. Cl. 340—825.31 **38 Claims**



1. An access control card used in access control systems comprising:

a battery;

wireless signal receiving means for receiving a coded wireless signal generated by a card reader;

clock means connected to the battery and including a receiver connected to the antenna for supplying a received signal based upon said coded wireless signal;

memory means for storing first and second stored codes; and,

transmit means connected to said wireless signal receiving means, to said clock means and to said memory means for comparing said first stored code and said received signal and for transmitting said second stored code when there is a match between said received signal and said first stored code.

4,353,065

DIGITAL RADIO PAGING COMMUNICATION SYSTEM

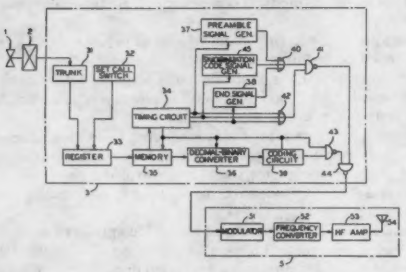
Toshihiro Mori, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Mar. 5, 1981, Ser. No. 240,873

Claims priority, application Japan, Mar. 28, 1980, 55/39038

Int. Cl.³ H04B *1/16*

U.S. Cl. 340—825.44 **14 Claims**



1. A digital radio paging communication system having a transmitter and a plurality of receivers, said transmitter comprising:

(a) first, second, third and fourth means for generating a preamble signal, a synchronization signal, a plurality of calling signals and a stabilization signal, respectively;

(b) fifth means for selectively controlling the outputs of said first, second, third and fourth means to arrange them into a sequence of first signals including said preamble signal and at least a batch of signals, said batch of signals including said synchronization signal and said plurality of calling signals which are divided into a plurality of groups, each group of signals having said stabilization signal at the leading portion thereof; and

(c) sixth means for modulating a carrier wave with said sequence of first signals and for transmitting the modulated carrier wave, each of said plurality of receivers comprising:

(d) seventh means for receiving said modulated carrier wave and demodulating it into said sequence of second signals;

(e) eighth means responsive to at least the demodulated preamble signal and stabilization signal for providing a reference voltage;

(f) ninth means for waveform-converting the demodulated sequence of second signals into said sequence of first signals with said reference voltage;

(g) tenth means coupled to the output of said ninth means for providing a first control signal upon detection of said preamble signal and for providing a second control signal upon detection of said synchronization signal; and

(h) eleventh means including means for continuously supplying power to at last said seventh means in response to said first control signal, and means for supplying power to at least said seventh means during a period of time allocated for reception of said group of signals for its own receiver in response to said second control signal.

4,353,066

CHANNEL SWITCHING NETWORK

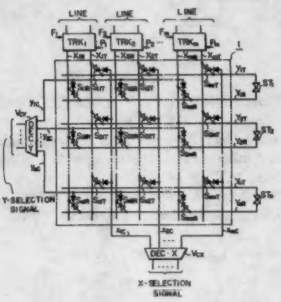
Tetsuro Inomata, Kawasaki; Kazutada Katsukura, Tachikawa, and Hikaru Takematsu, Higashikurume, all of Japan, assignors to Iwasaki Tsushinki Kabushiki Kaisha, Japan

Filed Nov. 25, 1980, Ser. No. 210,317

Claims priority, application Japan, Nov. 29, 1979, 54-154660

Int. Cl.³ H04Q *3/52*

U.S. Cl. 340—825.96 **3 Claims**



1. A channel switch network comprising:

a plurality of cross-point switches arranged in a switch matrix, each cross-point of which is constituted as a channel switch of balanced type having two PNPN semiconductor elements, each of the two PNPN semiconductor elements being arranged in a forward direction with respect to a direct current flowing from the channel switching network to a corresponding terminal equipment connected to said switch matrix;

selection means for designating in response to a pair of selection signals a column of cross-point switches and a line of cross-point switches in the switch matrix to select a simultaneously designated cross-point switch;

power source terminal means for receiving a direct current from a power source; and

control means provided for each pair of the incoming lines and the outgoing lines of the switch matrix to flow the direct current in the PNPN semiconductor elements at a cross-point of the switch matrix selected by said selection means so that the terminal voltage thereof for flowing the direct current in the selected PNPN semiconductor elements from said power source terminal means is controlled to temporarily rise to turn ON the selected PNPN semiconductor elements and thereafter to drop to a value as to only maintain the selected PNPN semiconductor elements in the ON states.

4,353,067

METHOD OF REDUCING SIDE LOBES OF COMPLEMENTARY CODED PULSES IN A COHERENT PULSE COMPRESSION DOPPLER RADAR RECEIVING SYSTEM

James H. Mims, Millersville, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

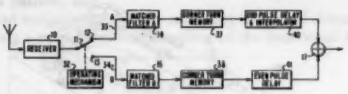
Filed Aug. 29, 1980, Ser. No. 182,390

Int. Cl.³ G01S *13/28*

U.S. Cl. 343—17.2 PC **3 Claims**

1. A method of receiving sequentially applied radar pulses, alternate ones of which are phase encoded with intervening pulses of a complementary code, comprising switching alternate ones of each of the pulses to provide a first channel for

each of the pulses encoded with one of the coomplementary codes and to provide a second channel for each of the pulses encoded with the other of the complementary codes; correlating the pulses in each individual channel to provide a separate matched output for each of the complementary codes; weighting each of the pulses in said first channel to provide a



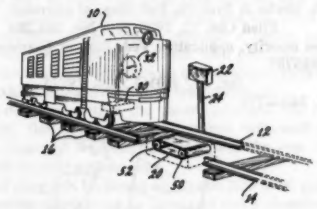
replica substantially corresponding to the amplitude and phase of a predetermined pulse in the second channel, delaying the pulses in the second channel to provide time coincidence with the weighted replicas of the first channel, and combining the weighted replicas of said first channel with pulses of said second channel.

4,353,068

METHOD FOR CALIBRATING BEAM EMITTER TYPE SPEED SENSOR FOR RAILROAD ROLLING STOCK

Emilio A. Fernandez, 1019 Salt Meadow La., McLean, Va. 22101

Filed May 23, 1980, Ser. No. 152,586
Int. Cl.[3] G01S *7/40*; G01P *3/00*; B61B *13/00*
U.S. Cl. 343—17.7 7 Claims



1. A method of calibrating as railroad vehicle speedometer in which speed is measured by a beam emitter type speed sensor mounted on the undercarriage of the railroad vehicle, and is displayed on a readout meter of the speedometer mounted in the vehicle, comprising the steps of:

a. Positioning an endless belt adapted to be moved in a longitudinal direction substantially parallel to a rail of a railroad track;

b. Rolling said railroad vehicle on said track over said endless belt to a position at which beams emitted by said speed sensor reflect off said endless belt;

c. Rotating said endless belt at a predetermined speed relative to said railroad vehicle; and

d. Calibrating said speedometer to display on its indicator a speed having a predetermined relationship to said predetermined speed.

4,353,069

ABSORPTIVE COATING FOR THE REDUCTION OF THE REFLECTIVE CROSS SECTION OF METALLIC SURFACES AND CONTROL CAPABILITIES THEREFOR

Peter H. Handel, 20 Roclare La., St. Louis, Mo. 63131; James A. Jungman, 611 Dougherty Terrace Dr., St. Louis, Mo. 63011, and Stephen N. Honickman, 1870 Clover Ridge Ct., Chesterfield, Mo. 63017

Filed Sep. 10, 1980, Ser. No. 185,979
Int. Cl.[3] H01Q *17/00*
U.S. Cl. 343—18 A 21 Claims

1. An absorptive coating for reduction of the reflective cross section of a metallic surface, comprising:

a first layer of N dopant material of predetermined thickness, said N dopant material having an increasing conductivity from its boundary outboard of the metallic surface to the N dopant material boundary with the metallic surface, the dielectric constant of the material likewise increasing along the thickness of the N dopant material in a direction toward the boundary of the N dopant material with the metallic surface; and

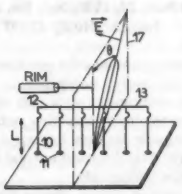
a second layer of P dopant material of predetermined thickness, said P dopant material having an increasing conductivity from its boundary outboard of the metallic surface to its boundary with the N dopant material, said P dopant material having a generally increasing dielectric constant along its thickness in a direction toward its boundary with the N dopant material.

4,353,070

BROAD BAND SYSTEM OPERATING IN THE SUBMILLIMETER WAVE RANGE

Maurice Pyee, Le Plessis Trevise, France, assignor to Agence Nationale de Valorization de la Recherche, Paris, France

Filed Jul. 28, 1980, Ser. No. 173,067
Claims priority, application France, Aug. 1, 1979, 79 19762
Int. Cl.[3] H01Q *3/26*
U.S. Cl. 343—701 12 Claims



1. A high speed microwave system for operation in the submillimeter wave radiation range, comprising a plurality of non-linear elements distributed in a regular planar array and an antenna structure for coupling said plurality of elements to the submillimeter wave radiation field, said antenna structure comprising a curtain of antenna members connected in parallel electrically and having point-like contacts which make electri-

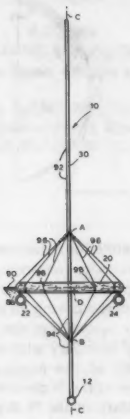
cal contact with said plurality of elements, said antenna members being constituted by a plate-like construction coupled to said non-linear elements through said point-like contacts.

4,353,071

SELF-ERECTING FLOATABLE STRUCTURE

Robert G. Bernstein, and David A. Clunies, both of Gaithersburg, Md., assignors to Fairchild Industries, Inc., Germantown, Md.

Filed Apr. 28, 1981, Ser. No. 258,407
Int. Cl.³ H01Q *1/34*
U.S. Cl. 343—709 **8 Claims**



1. Self-erecting floatable structure comprising a collapsible extendible element, storage means associated with said collapsible extendible element for storing said collapsible extendible element in its collapsed configuration, inflatable means operatively connected to said collapsible extendible element for causing said collapsible extendible element and said storage means to float in a liquid such as water or the like and chemically gas generating means operatively connected to said inflatable means for chemically reacting with the liquid and generating a gas to inflate said inflatable means when in contact with said liquid.

4,353,072

CIRCULARLY POLARIZED RADIO FREQUENCY ANTENNA

George J. Monser, Goleta, Calif., assignor to Raytheon Company, Lexington, Mass.

Filed Nov. 24, 1980, Ser. No. 210,094
Int. Cl.³ H01Q *13/02*
U.S. Cl. 343—725 **2 Claims**

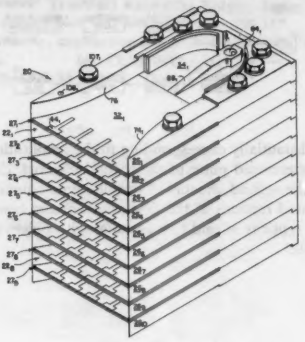
1. A radio frequency antenna for producing circularly polarized radio frequency energy comprising:

(a) a waveguide section having a pair of opposing walls;

(b) a first feed means for establishing radio frequency energy in such waveguide section having a linear polarization with an electric field disposed normal to the pair of opposing walls of the waveguide;

(c) a first microwave circuit means for establishing radio frequency energy having a linear polarization disposed normal to the electric field of the first mentioned linear polarization, such microwave circuit means comprising: a dielectric; a strip conductor circuit disposed over a first surface of the dielectric; and a ground plane conductor disposed over a second opposite surface of the dielectric, such ground plane providing one of the pair of opposing walls of the waveguide;

(d) a second microwave circuit means for establishing radio frequency energy having a linear polarization disposed normal to the electric field of the first mentioned linear polarization, such microwave circuit means comprising: a second dielectric; a second strip conductor circuit disposed over a first surface of the second dielectric; and a second ground plane conductor disposed over a second surface of the second dielectric, such second ground plane



conductor providing the second one of the pair of opposing walls of the waveguide section; and,

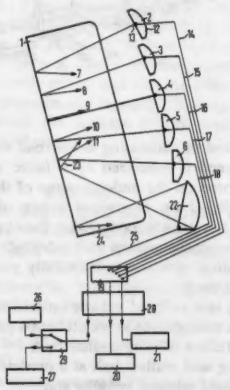
(e) a power distribution means for coupling radio frequency energy to the first and second microwave circuit means with equal power and equal phase shift and for coupling radio frequency energy to the first feed means with a phase shift 90° with respect to the phase shift of the energy fed to the first and second microwave circuit means.

4,353,073

ANTENNA ARRANGEMENT FOR A RADAR SURVEILLANCE METHOD FOR TARGET LOCATING WITH ALTITUDE ACQUISITION

Anton Brunner, Wangen, and Erwin Kress, Woerthsee, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 27, 1980, Ser. No. 201,280
Claims priority, application Fed. Rep. of Germany, Nov. 13, 1979, 2945789
Int. Cl.³ H01Q *3/24, 19/15*
U.S. Cl. 343—779 **17 Claims**



1. An antenna arrangement for radar surveillance for target locating having altitude acquisition, comprising:

a parabolic cylinder reflector mounted for rotation about a vertical axis; and

a primary radiator row arranged along the focal line of said reflector including a plurality of individual radiators,

each of said individual radiators operable with a beam which is narrow in its horizontal extent and all individual radiators inclined in a vertical plane with respect to one another so that their individual lobes lie one above another to form a vertical pattern, and

each of said individual radiators including a vertical dimension providing a predetermined bundling of the individual lobes.

4,353,074

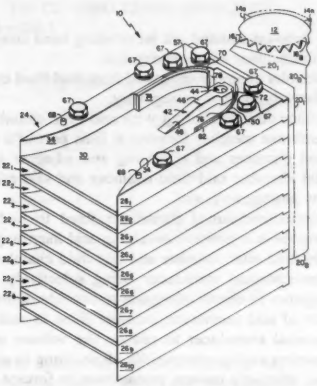
RADIO FREQUENCY RIDGED WAVEGUIDE ANTENNA

George J. Monser, Goleta, and Albert A. Roy, Lompoc, both of Calif., assignors to Raytheon Company, Lexington, Mass.

Filed Nov. 24, 1980, Ser. No. 209,936

Int. Cl.³ H01Q *13/02*

U.S. Cl. 343—786 **8 Claims**



1. A radio frequency antenna element comprising a waveguide having opposing relatively wide, upper and lower wall portions, a pair of opposing relatively narrow side wall portions, and a relatively narrow rear wall portion, such portions being electrically connected to provide a cavity having an open end disposed opposite the rear wall portion, the separation between the side wall portions decreasing as such side wall portions extend towards the rear wall portions;

a ridge disposed within the cavity adjacent the rear wall portion, the decreasingly separated side wall portions being disposed between the ridge and the rear wall portion of the waveguide; and

a pair of channels disposed along the side wall portions of the waveguide having an open end and a closed end, such open end being closer to the rear wall portion of the waveguide than the closed end.

4,353,075

TELESCOPING VEHICLE RADIO ANTENNA WITH COMPRESSIBLE O-RING SEAL

Ralph W. Edwards, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 9, 1981, Ser. No. 252,599

Int. Cl.³ H01Q *1/10*

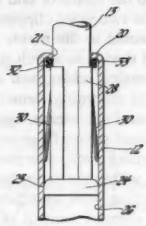
U.S. Cl. 343—903 **1 Claim**

1. A telescoping, multi-tube, vehicle radio antenna adapted for power extension and retraction, comprising, in combination:

an outer metallic antenna tube having an inward bent upper end defining an inner annular bearing surface;

an inner metallic cylindrical antenna member in telescoping relationship within the tube, the element having an expanded diameter rigid lower end defining an outer annular bearing surface and being slidably supported in the tube at the axially separated inner and outer annular bearing surfaces, the cylindrical antenna member further having outer circumferential shoulder means spaced upwardly from the lower end; and

a circumferential sealing element fixed to the cylindrical member in a position abutting the upper side of the outer



circumferential shoulder means, said sealing element being compressible between the outer circumferential shoulder means and the inward bent upper end of the tube when the antenna is extended to prevent entry of water into the tube but being smaller in outer diameter than the inner diameter of the remainder of the tube so as to contribute no additional sliding friction or tendency to bind between the tube and cylindrical member during antenna extension and retraction.

4,353,076

APPARATUS FOR CONTROLLING A RECORDER

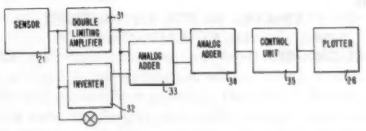
Armin Bohg, Weil im Schonbuch, Fed. Rep. of Germany, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 10, 1980, Ser. No. 138,952

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1979, 2935596

Int. Cl.³ G01D *9/02*

U.S. Cl. 346—65 **13 Claims**



1. An apparatus for controlling a recorder in response to measured values (Y_M) to be recorded in curve form in a recording field of a recording medium, comprising:

recording elements means being energized for marking purposes by on scale and off-scale excursions of the measured values (Y_M), on the basis of comparison results ($Y_{MIN} < Y_M < Y_{MAX}$) and ($Y_{MIN} > Y_M > Y_{MAX}$) respectively of the respective measured values (Y_M) with reference values (Y_{MIN} and Y_{MAX}) predetermined by the upper and lower margins of the recording filed; and

a recording control unit means including:

means for providing a ramp function of the measured values to be recorded in curve form of the detected measured values (Y_M), in which the ramp amplitude determines the margin conditions defined by the reference values (Y_{MIN} and Y_{MAX}), one ramp section of said ramp function, with the direct measured value recording, having at least one associated ramp section for the indirect measured value recording, said ramp function is symmetrical with respect

to rise and fall and the sequential ramp sections are equal and each correspond to one semi-period;

means for applying the symmetrical ramp function for releasing the transition from indirect to direct measured value recording, or vice versa, having a two-sided clipper defining the recording width of the recording field, an inverter, a sensor which is applied to the inputs of said clipper and said inverter, a first analog adder and a second analog adder, the outputs of the clipper and of the inverter are connected to the inputs of said first analog adder, and the outputs of the two-sided clipper and of the first analog adder are connected to the inputs of said second analog adder, a control device to which is connected the output of the second analog adder, and said control device is connected to said recording element means;

said recording control unit means, upon direct recording for detecting measured values ($Y_{MIN}<Y_M<Y_{MAX}$) existing inside the recording field, energizes said recording elements effective within the recording field for continuing the curve recording with simultaneous marking by specific recording element control of the respective curve section extending inside the recording field; and

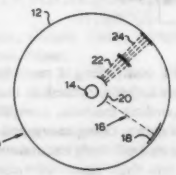
said recording control unit, upon indirect recording for detecting measured values ($Y_{MIN}>Y_M>Y_{MAX}$) existing outside the recording field, energizes said recording elements effective within the recording field for continuing the curve recording with simultaneous marking by specific recording element control of the respective curve section extending outside the recording field.

4,353,077

OPTICAL FLOPPY DISC DATA STORAGE AND RETRIEVAL TECHNIQUES

Phillip E. Gokey; Donovan W. Hurlbut; Emma L. Sederholm; Angel F. Terry, and Alan A. Jewer, all of Whitewater, Wis., assignors to News Log International, Inc., Fort Atkinson, Wis.

Filed Sep. 10, 1979, Ser. No. 74,095
Int. Cl.³ G01D *15/24*
U.S. Cl. 346—137 **12 Claims**



1. An information record comprising:

a circular body including a peripheral edge and adapted for rotation about an axis;

optically retrievable information carried by said body in radial lines between said axis and said peripheral edge; and

address information carried by said body identifying locations of respective portions of said optically retrievable information,

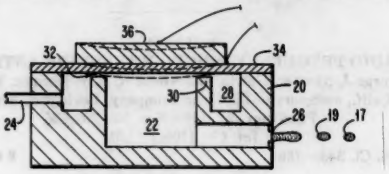
said address information including a plurality of line addresses each located within a respective line of said optically retrievable information.

4,353,078

INK JET PRINT HEAD HAVING DYNAMIC IMPEDANCE ADJUSTMENT

Francis C. Lee, San Jose; Ross N. Mills, Morgan Hill, and Frank E. Talke, Morgan Hill, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 24, 1979, Ser. No. 78,410
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **9 Claims**



1. A drop-on-demand ink jet printing head comprising:

a fluid chamber for receiving ink;

a fluid inlet chamber separated from said fluid chamber by a relatively narrow passageway;

an orifice communicating with said fluid chamber;

a membrane member forming at least part of a wall of said fluid chamber and overlying and adjacent to said fluid inlet chamber said fluid chamber and said relatively narrow passageway; and

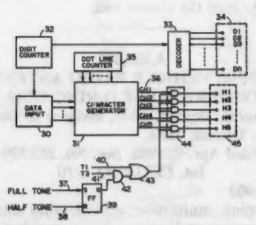
an electromechanical transducer fixed to said membrane member in a position overlying said narrow passageway, said fluid inlet chamber and said fluid chamber; said electromechanical transducer being selectively actuable in response to electrical signals to provide deflection of the part of said membrane member fixed to said electromechanical transducer to reduce the volume of said fluid chamber and to substantially close, along its entire length, said relatively narrow passageway to force a single drop of ink from said orifice and to substantially close the flow path from said fluid chamber to said fluid inlet chamber during formation of the drop of ink.

4,353,079

ELECTRONIC DEVICE HAVING A VARIABLE DENSITY THERMAL INK JET RECORDER

Tsuyoshi Kawanabe, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 24, 1980, Ser. No. 133,302
Claims priority, application Japan, Apr. 2, 1979, 54/39474
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **4 Claims**



1. An electronic device having a thermal ink jet printer comprising:

a character generator for generating character information to be recorded on a recording medium;

an AND gate, one input terminal of which receives the output of said character generator;

heater means for receiving the output of said AND gate and for causing an ink jet nozzle to eject droplets of a recording fluid in response to said AND gate's output;

a keyboard provided with an instruction key for instructing the number of outputs of said AND gate; and

a control section connected to another input terminal of said AND gate for controlling the number of outputs from said AND gate in accordance with the operation of said instruction key.

4,353,080

CONTROL SYSTEM FOR ELECTROGRAPHIC STYLUS WRITING APPARATUS

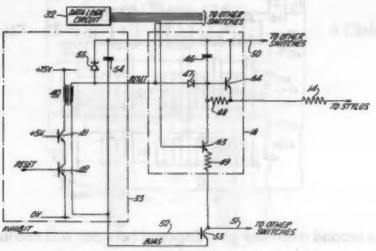
David A. Cross, Wrestlingworth, England, assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 20, 1979, Ser. No. 105,800

Claims priority, application United Kingdom, Dec. 21, 1978, 49534/78

Int. Cl.³ G03G *15/044*; G01D *15/06*

U.S. Cl. 346—153.1 **5 Claims**



1. A control system for an electrographic stylus writing apparatus including a set of styli, a matrix connected to supply selectively to each stylus two electrical pulses which are required to have coincidence to render the stylus operative, first electrical drive means for supplying one of said two pulses which is connected in parallel to said matrix through a plurality of first selectable switches and resistors, each such resistor connected in series with a stylus, second electrical drive means for supplying the other of said two pulses which is connected to said matrix through a plurality of second selectable switches and capacitors, each such capacitor coupled to subgroups of said stylus, electrical control means arranged to open and close said first and second selectable switches such that said pulses are applied to operate each selected stylus, and timing means arranged to control the selection of said first selectable switches before the application of the first pulse from said first electrical drive means and to control the selection of said second selectable switches before the application of the second pulse from said second electrical drive means.

4,353,081

GRADED BANDGAP RECTIFYING SEMICONDUCTOR DEVICES

Christopher L. Allyn, Morristown; Arthur C. Gossard, Warren, and William Wiegmann, Middlesex, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 29, 1980, Ser. No. 116,622

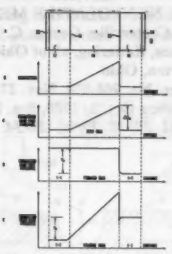
Int. Cl.³ H01L *29/161, 27/14*

U.S. Cl. 357—16 **11 Claims**

1. A semiconductor device (10) comprising

first and second relatively narrow bandgap semiconductor layers (12, 14)

a wider bandgap semiconductor layer (16) interposed between said first and second layers, said wider bandgap layer having a graded bandgap which increases from one of said first and second layers to the other, characterized in that said device is capable of unipolar rectification, and said first and second layers have the same conductivity type, and



said wider bandgap layer is a barrier layer having a thickness large enough to prevent substantial tunneling therethrough and smaller than the depletion length of carriers therein.

4,353,082

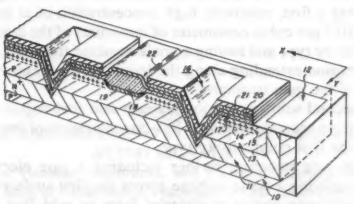
BURIED SENSE LINE V-GROOVE MOS RANDOM ACCESS MEMORY

Pallab K. Chatterjee, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 29, 1977, Ser. No. 820,179

Int. Cl.³ H01L *29/78, 29/06, 27/10, 29/04*

U.S. Cl. 357—23 **5 Claims**



1. A memory cell for a semiconductor memory device comprising in combination:

a substrate of silicon material of one conductivity type having a top surface which is at least partially planar;

capacitance means formed at said planar surface and including a layer of polycrystalline silicon which is separated from said surface by a relatively thin silicon dioxide insulating layer and further including a storage region within said surface underlying said layer of polycrystalline silicon;

said silicon substrate being provided with a V-groove formed in the top surface thereof, said V-groove being located adjacent said storage region and the bottom of said V-groove extending into said silicon substrate;

transistor means forming a transfer region within said silicon substrate and being defined in a side wall of said V-groove by said layer of polycrystalline silicon lying within said V-groove and separated from said side wall thereof by a relatively thin silicon dioxide insulating layer, said transfer region including a source to drain path located within said silicon substrate adjacent said side wall of said V-groove, said storage region being located at one end of said path; and

a sense region formed by a heavily doped region of the opposite conductivity type with respect to said silicon substrate and embedded within said silicon substrate so as to underlie said storage region and said transfer region, the bottom of said V-groove contacting said sense region, and

said sense region being located at the other end of said source to drain path.

4,353,083

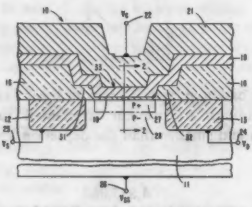
LOW VOLTAGE NONVOLATILE MEMORY DEVICE

Murray L. Trudel, Centerville; George C. Lockwood, Dayton, and G. Glenn Evans, Kettering, all of Ohio, assignors to NCR Corporation, Dayton, Ohio

Continuation of Ser. No. 964,014, Nov. 27, 1978, abandoned. This application Oct. 1, 1980, Ser. No. 192,977

Int. Cl.³ H01L *29/78, 29/90, 29/34;* G11C *11/34*

U.S. Cl. 357—23 **9 Claims**



1. An avalanche-written semiconductor memory device comprising:

a semiconductive substrate of a first conductivity type;

a charge storage gate structure formed on said substrate and having at least a memory portion;

a first relatively thin surface-adjacent substrate region having a first, relatively high concentration of at least about 10^{18} per cubic centimeter of impurities of the first conductivity type and having a predetermined thickness, said first region extending along the length of the memory portion of the gate structure;

a second substrate region beneath said first region and having a second, relatively low concentration of impurities of the first conductivity type;

said gate structure further including a gate electrode for applying a write voltage across the first surface-adjacent substrate region to thereby form in said first substrate region an inverted region and an underlying depletion region of a thickness substantially less than said first substrate region thickness; and

an impurity region of a second conductivity type formed in said substrate for applying a control voltage between said inverted region and said second substrate region causing avalanche breakdown of said depletion region and thereby providing charges to write said device by transfer of said charges to said gate structure.

4,353,084

READOUT CIRCUIT FOR A MONOLITHICALLY INTEGRATED CIRCUIT FOR LINEAR IMAGE SCANNING

Heiner Herbst, and Matthias Niemeyer, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 24, 1980, Ser. No. 171,718

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1979, 2939518

Int. Cl.³ H01L *27/14*

U.S. Cl. 357—30 **4 Claims**

1. A monolithically integrated circuit for linear image scanning disposed on a semiconductor substrate comprising:

a first row of opto-electronic sensor elements;

a first type of color filter covering each of said sensor elements in said first row;

a first charge transfer device coupled to said opto-electronic sensor elements in said first row for readout thereof;

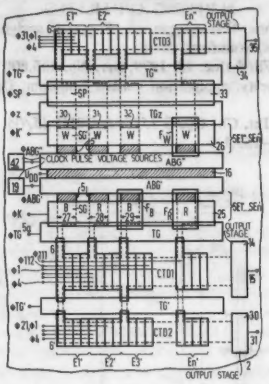
a second row of opto-electronic sensor elements;

second and third types of color filters alternately covering said sensor elements in said second row, said first, second and third types of color filters having respectively different spectral ranges;

an overflow drain zone disposed at a boundary surface of said semiconductor substrate and having an opposite conductivity with respect thereto,

said first and second rows of sensor elements being parallel and said overflow drain zone being parallelly disposed between said first and second rows;

a first overflow gate disposed between said first row of sensor elements and said overflow drain zone;



a second overflow gate disposed between said second row of sensor elements and said drain zone; and

a clock pulse voltage source connected to said first and second overflow gates for supplying respective pulses to said first and second overflow gates which alternate between a lower voltage value for blocking flow of charge from said sensor elements into said overflow drain zone and an upper voltage value for permitting flow of charge from said sensor elements into said overflow drain zone,

whereby said sensor elements in said first and second rows are cyclically scanned and emptied and said lower voltage value prevents overlapping of charge between successive scanning cycles.

4,353,085

INTEGRATED SEMICONDUCTOR DEVICE HAVING INSULATED GATE FIELD EFFECT TRANSISTORS WITH A BURIED INSULATING FILM

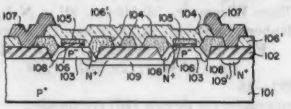
Junji Sakurai, Tokyo, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 26, 1979, Ser. No. 15,427

Claims priority, application Japan, Feb. 27, 1978, 53-21912; Jun. 29, 1978, 53-78931; Nov. 13, 1978, 53-138805

Int. Cl.³ H01L *27/02, 29/06, 29/04*

U.S. Cl. 357—42 **16 Claims**



1. An integrated semiconductor device comprising

a semiconductor substrate of a first conductivity type,

an insulating film formed on said substrate, said insulating film

comprising a plurality of apertures each exposing a part of the surface of said substrate,

a semiconductor layer formed selectively on said insulating film and on said exposed parts of said surface of said substrate, said semiconductor layer comprising an epitaxial layer where in contact with the exposed parts of said substrate and a polycrystal layer on said insulating film, said polycrystal layer comprising wiring portions,

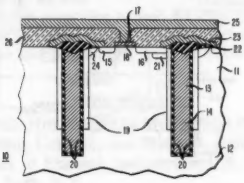
a plurality of active elements formed in said epitaxial layer within selected ones of said apertures, each of said elements comprising at least a first region of a second conductivity type opposite to said first conductivity type, and

a second region of said second conductivity type formed in said substrate under said insulating film, said second region extending so as to selectively cross said wiring portions of said polycrystal layer so as to electrically connect said first regions of at least two of said active elements.

4,353,086
SILICON INTEGRATED CIRCUITS

Ralph J. Jaccodine, Allentown, Pa., and John A. Michejda, Clinton, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 7, 1980, Ser. No. 147,466
Int. Cl.³ H01L *27/02*
U.S. Cl. 357—51 **6 Claims**



1. A memory comprising a plurality of memory cells arranged in an array of rows and columns, each memory cell including an access transistor and a storage capacitor serially connected, comprising a monocrystalline silicon chip which is grooved to form a plurality of individual mesas (**11**) arranged in columns and rows

characterized in that

polycrystalline doped silicon (**14**) fills the grooves (**13**) and is isolated from the mesas by a dielectric layer (**20**), a separate access transistor is formed on the surface of each mesa, and a separate storage capacitor is associated with each mesa, one plate of the capacitor being formed by a layer (**19**) on the sidewall of the mesa and the other plate by the polycrystalline silicon fill (**14**), and the sidewall layer including a low resistance connection to a source/-drain region of the surface access transistor.

4,353,087
AUTOMATIC MASK ALIGNMENT

Daniel G. Berry, Newtown, and David A. Markle, Norwalk, both of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

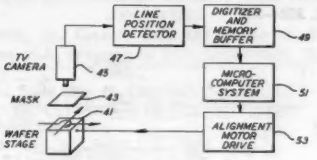
Filed Mar. 12, 1979, Ser. No. 19,964
Int. Cl.³ H04N *7/18*
U.S. Cl. 358—101 **11 Claims**

1. Apparatus for detecting and aligning first and second diamond shaped targets of a size that can be printed on a microcircuit chip without interfering with the lines thereon, consisting only of lines diagonally disposed with respect to the image transducer which may also be inclined with respect to the chip edges, said targets being of different sizes, said first target on a microcircuit and said second target on a mask to be exposed thereon, comprising:

(a) a television camera and optical system for viewing said first target on the microcircuit and said second target on the mask to be exposed;

(b) means having the output of said camera as an input for detecting the edge of each diagonal line on said microcircuit and said mask;

(c) means for storing coordinates representing the line position location of each detected edge; and



(d) computing means for:

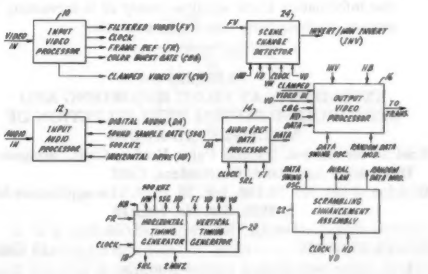
(1) calculating from the stored line position locations the centers of the diamond shaped targets.

(2) calculating the difference between the location of the centers of said two targets.

4,353,088
CODING AND DECODING SYSTEM FOR VIDEO AND AUDIO SIGNALS

Pieter den Toonder, Dordrecht, and Pieter J. Fondse, Papendrecht, both of Netherlands, assignors to Oak Industries, Inc., Rancho Bernardo, Calif.

Filed May 14, 1980, Ser. No. 149,707
Int. Cl.³ H04N *7/16*; H04K *1/02*
U.S. Cl. 358—120 **2 Claims**



1. Means for coding video and audio signals including:

(a) means for suppressing synchronizing information during video horizontal blanking intervals,

(b) means for inserting digital sound data and decoder clock data into the suppressed horizontal blanking intervals,

(c) and means for applying sine wave amplitude modulation of approximate line frequency to the aural carrier to prevent the chrominance subcarrier from providing receiver synchronization.

4,353,089

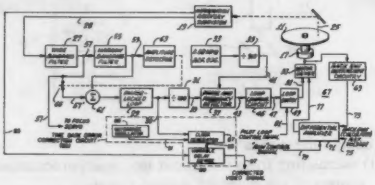
APPARATUS FOR CORRECTING THE TIME BASE OF INFORMATION RECOVERED FROM A MOVABLE INFORMATION STORAGE MEDIUM

John S. Winslow, Altadena, and Wayne R. Dakin, Redondo Beach, both of Calif., assignors to Discovision Associates, Costa Mesa, Calif.

Division of Ser. No. 920,701, Jun. 30, 1978, Pat. No. 4,236,050. This application Aug. 11, 1980, Ser. No. 177,149

Int. Cl.³ H04N 5/76

U.S. Cl. 358—337 **5 Claims**



1. Apparatus for recovering information from a movable storage medium and for correcting variations in the time base of the recovered information, wherein an information signal and a separate pilot signal are recorded on the storage medium in a plurality of substantially parallel information tracks, said pilot signal having a prescribed, constant frequency, said apparatus comprising:

information recovery means for recovering the recorded signals from the storage medium;

means for producing a reference signal having a predetermined constant frequency corresponding to the nominal frequency of the recovered pilot signal; means for extracting the pilot signal from the recovered signals; and

delay means responsive to the recovered pilot signal and to the reference signal for delaying the recovered information by an amount that varies in accordance with any difference in the phase angles of the two signals, thereby correcting for any time base variations, in the recovered information,

the phase angle of the pilot signal recorded on the storage medium being substantially aligned with itself on adjacent information tracks, whereby the apparatus is operable to correct for time base variations even when said information recovery means is positioned relative to the storage medium such that it is recovering signals from more than one information track simultaneously or is traversing the storage medium from one track to another.

4,353,090

EXTENDED PLAY VIDEO RECORDING AND REPRODUCING SYSTEM WITH SELECTION OF MULTIPLEXED AUDIO

Kent D. Broadbent, Rancho Palos Verdes, Calif., assignor to Discovision Associates, Costa Mesa, Calif.

Division of Ser. No. 50,188, Jun. 20, 1979. This application May 5, 1980, Ser. No. 146,819

Int. Cl.³ H04N 5/76, 5/78

U.S. Cl. 358—342 **13 Claims**

1. A video reproducing system comprising:

a recording medium having recorded thereon frames of video information, encoded frame repeat counts indicative of the number of times each of the recorded frames is to be reproduced, and a plurality of channels of audio information associated with each frame;

transducer means for reading the recorded information from said recording medium and producing therefrom a corresponding electrical signal;

drive means for moving said transducer means with respect to said recording medium;

means for decoding the frame repeat counts encoded in the recorded video signal;

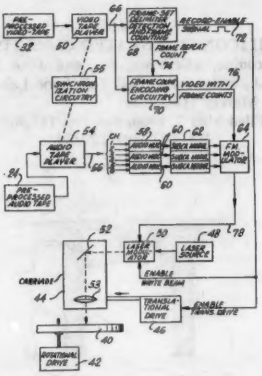
means responsive to the decoded repeat count, for controlling the position of said transducer means in such a manner as to read each frame of video information a selected number of times;

bandpass filter means, for separating the audio channel subcarriers;

a plurality of demodulators, for demodulating each subcarrier to obtain a multiplexed audio signal;

demultiplexing means to derive two audio channels from a selected multiplexed audio signal;

and means for selecting one of said audio channels for reproduction, based upon the value of the decoded repeat count and the number of times that a frame has already been repeated;



wherein said means responsive to the decoded repeat count includes an up/down counter capable of assuming a zero or non-zero count condition;

means for detecting a zero count condition in said counter;

means responsive to said means for detecting a zero count condition and operative when said counter is at a zero count, for incrementing said counter by the value of a decoded frame repeat count;

means responsive to said means for detecting a zero count condition and operative when said counter is at a non-zero count, for decrementing said counter by one for each frame reproduced by said transducer means; and

means for generating a read/repeat signal based on the value stored in said counter, wherein said transducer means is directed to read a new frame when the value in said counter is zero, and to repeat a frame when the value in said counter is non-zero.

4,353,091

CIRCUIT FOR DETECTING FAULTS IN HORIZONTAL SYNC PULSE SIGNALS

Karl-Heinz Hoppe, Darmstadt-Wixhausen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 16, 1980, Ser. No. 216,862

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1979, 2951023

Int. Cl.³ H04N 7/02, 7/04, 5/04; H03K 5/18

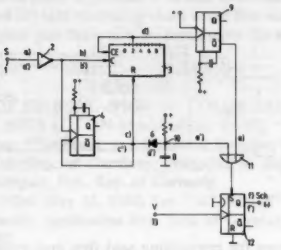
U.S. Cl. 358—139 **6 Claims**

1. Electrical circuit for detecting faults in a first sequence of pulse signals having a first keying ratio, said circuit including a counter (e) which has a clock input terminal (C) for applying pulse signals of said first sequence, a control input terminal (R) for applying a second sequence of pulse signals having the same pulse frequency as said first se-

quence and having a second keying ratio which is different from said first keying ratio, an output terminal corresponding to a predetermined count state and a clear terminal (CE) which is connected to said output terminal,

a monostable flip-flop (9),

an OR-gate (11) having a first OR input terminal, a second OR input terminal, and an OR output terminal, for producing a switching signal upon detection of a fault in said first pulse signals, the output terminal of said counter being connected by means of said flip-flop (9) to said first OR input terminal,



an RC-link (7, 8), and

a diode (6) for supplying to said RC-link (7, 8) said second sequence of pulse signals, said RC-link (7, 8) being connected to said second OR input terminal.

4,353,092

REAL TIME HISTOGRAM MODIFICATION SYSTEM

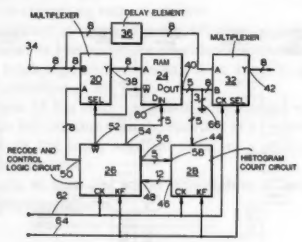
Peter K. Bailey, Uckfield, and Leslie H. Guildford, Haywards Heath, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 31, 1980, Ser. No. 135,969

Claims priority, application United Kingdom, Mar. 29, 1979, 7910951

Int. Cl.³ H04N 5/14

U.S. Cl. 358—160 **14 Claims**



1. A real time histogram modification system in which a recoding strategy of pixels in a digitized input video signal is determined by processing iteratively the number of pixels in respective grey levels of output picture information using a predetermined scene adaptive quantizer comprising:

means for compressing the number of grey levels in the input video signal into a predetermined number of grey levels in accordance with an encoding strategy;

means, coupled to said compressing means, for counting and storing the number of pixels in the compressed video signal appearing in each of said predetermined number of grey levels;

means, coupled to said counting and storing means, for determining whether each of said counts is within, above or below a range of values, called a window, about each of respective predetermined theoretical values, which theoretical values collectively form said scene adaptive quantizer; and

means for generating said encoding strategy and for recoding said strategy, when any of said counts are above or below said respective window, by adjusting the number of input grey levels for the respective output grey level.

4,353,093

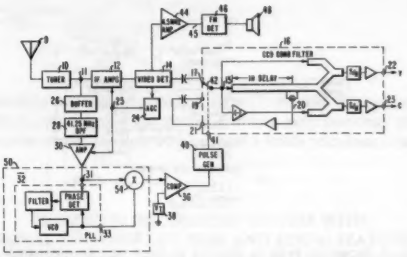
IMPULSE NOISE REDUCTION SYSTEM FOR TV RECEIVERS

Jesse Durbin, Jr., Carmel, Ind., and Dalton H. Pritchard, Princeton, N.J., assignors to RCA Corporation, New York, N.Y.

Filed May 11, 1981, Ser. No. 262,782

Int. Cl.³ H04N 5/14, 5/21, 9/535, 5/76

U.S. Cl. 358—160 **17 Claims**



1. A television receiver for processing broadcast picture and sound signals comprising:

circuitry responsive to a control signal for reducing the effects of electrical noise present in the picture signal; and

noise detection circuitry responsive to said sound signals for generating said control signals.

4,353,094

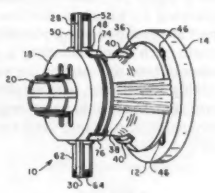
ADJUSTABLE YOKE ASSEMBLY

Robert Dam, Paletine, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Oct. 27, 1980, Ser. No. 200,805

Int. Cl.³ H04N 5/64, 5/655

U.S. Cl. 358—249 **13 Claims**



1. In a cathode ray tube yoke assembly which includes a liner carrying a first winding and a core mounted on the liner and carrying a second winding, a mechanism for accurately positioning the second winding relative to the first winding, comprising:

at least one elongated member which projects radially outwardly from the liner; and

a ring adapted to mate fixedly with the core and carrying at least one finger which projects radially outwardly from the ring and which carries detent means such that, when the ring is mated with the core on the liner, said detent means engages said elongated member so that the core may be manually rotated with respect to the liner in a

series of detented increments, thereby to accurately adjust the relative positions of the windings.

4,353,095
FACSIMILE BANDWIDTH COMPRESSION METHOD SYSTEM AND APPARATUS

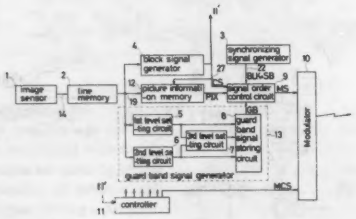
Kenzou Tatematsu, Amagasaki; Yasuhiro Sugihara, Katano; Hiroyuki Andou, Hirakata; Tatsuo Seki, Osaka; Yoshito Dezaki, Osaka, and Yasukazu Nishino, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jan. 24, 1979, Ser. No. 6,245

Claims priority, application Japan, Jan. 31, 1978, 53-10104; Jun. 22, 1978, 53-76054; Jun. 22, 1978, 53-76055

Int. Cl.³ H04N 7/12

U.S. Cl. 358—260 **41 Claims**



1. A facsimile system, having at least one transmitting end and at least one receiving end; in which a control signal part and a picture information part of a scanning line signal are respectively encoded and decoded in accordance with a white block skipping method; and in which a facsimile signal comprising a carrier modulated by respective scanning line signals is transmitted, a scanning line signal being distinguished from a neighboring scanning line signal by a synchronizing signal part, comprising:

means for generating a reference signal part having a first binary signal level; and

means for composing a scanning line signal; said reference signal part being inserted after said synchronizing signal part having a second binary signal level and being before said control signal part to distinguish therebetween; and said picture information part following said control signal part,

wherein said synchronizing signal part, said reference signal part, said control signal part, and said picture information part are represented by bits, and the bits of said picture information part are grouped into a plurality of first blocks of uniform length each block including a guard band of a specified number of bits; the total of the number of bits of said synchronizing signal part, said reference signal part, and said control signal part being an integral multiple of a number determined in accordance with the number of bits in a first block.

4,353,096
DIGITAL FACSIMILE SYSTEM TO BAND-COMPRESS HALF-TONE PICTURE SIGNALS

Hidekazu Sakurai, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Oct. 4, 1979, Ser. No. 81,635

Claims priority, application Japan, Oct. 5, 1978, 53-12324; Apr. 6, 1979, 54-41787

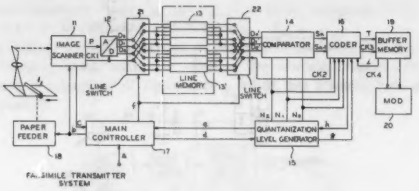
Int. Cl.³ H04N 7/12

U.S. Cl. 358—263 **4 Claims**

1. A system for transmitting digital facsimile signals representing an optical image, said system transmitting half-tone components of said image with reduced redundancy, said system comprising:

first means for photo-electrically scanning said image in one direction while said image is being shifted in a direction perpendicular to said one direction, in order to provide a video signal including a series of line segments, each of said segments corresponding to one scan by said first means;

second means for providing a reference signal representative of n reference voltages which cyclically vary in a set of n reference voltages (n being an integer greater than one);



third means for controlling said first and second means so that each of said line segment video signals is repeated n times while each of said n reference voltages appear sequentially for the duration of a line segment;

fourth means for comparing said video signal with said reference signal voltages to provide a two-level representation of the difference therebetween; and

fifth means for converting said two-level representation into a binary representation for transmission with reduced redundancy.

4,353,097
FACSIMILE APPARATUS

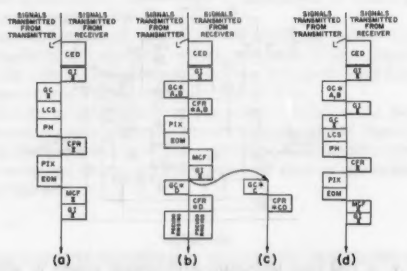
Takashi Takeda, Higashimurayama; Minoru Ogata, Yokohama, and Sadasuke Kurabayashi, Asaka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 22, 1980, Ser. No. 199,530

Claims priority, application Japan, Oct. 29, 1979, 54-140039; Oct. 29, 1979, 54-140040; Oct. 29, 1979, 54-140041

Int. Cl.³ H04N 1/32, 1/42

U.S. Cl. 358—287 **14 Claims**



1. A facsimile apparatus comprising:

original size detection means for detecting whether the size of an original document is a first size or a second size;

reading means for reading picture information on said original document and for transmitting electrical picture signals representative of the size of said original document corresponding to either said first size or said second size;

receiving means for receiving information indicating (i) whether a second apparatus interconnected thereto is in a specified reception mode and (ii) whether the size of a recording sheet in said second apparatus is said first size or said second size; and

control means for (1) causing said reading means to transmit

said electrical picture signals corresponding to a given size in the event that said receiving means receives information indicating that (a) said second apparatus is in said specified reception mode, and (b) said recording sheet is of said given size, and (2) for causing said reading means to transmit electrical picture signals corresponding to the smaller size of said first and second sizes in the event that said receiving means receives information indicating that (c) said second party apparatus is in said specified receiption mode and (d) said recording sheet is the first size, and that said original size detection means detects the second size.

4,353,098
METHOD OF STORING DIGITAL COLOR TELEVISION SIGNALS ON MAGNETIC TAPE

Richard Heinz, Pfungstadt, and Reinhard Kutzner, Darmstadt, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 15, 1980, Ser. No. 149,948

Claims priority, application Fed. Rep. of Germany, May 30, 1979, 2921892

Int. Cl.³ H04N *5/79*

U.S. Cl. 360—9.1 **13 Claims**

1. A method of storing a digital color television signal on magnetic tape, in which the signal includes video information signals and associated audio information signals, comprising

guiding the tape helically around a headwheel;

recording the color television signal by at least one magnetic recording head disposed on the periphery of the rotatable headwheel to form a recording track which has a plurality of discontinuous substantially parallel track segments extending at an angle with respect to the longitudinal direction of the tape;

wherein the recording step comprises

recording at least portions of audio information signals alternating with at least portions of video information signals on said track segments extending at an angle to the longitudinal direction of the tape,

at least some of the track segments containing a section of the audio information signals recorded at a predetermined position on the track segment adjacent a section of the video information;

and wherein at least the audio information is recorded in time compressed form.

4,353,099
TAPE-RECORDED SIGNAL RECOVERY METHOD AND APPARATUS

Edward K. Shum, San Jose, and John J. Peterson, Woodside, both of Calif., assignors to Precision Data, Inc., Mountain View, Calif.

Filed Mar. 12, 1981, Ser. No. 242,954

Int. Cl.³ G11B *5/02, 5/04*

U.S. Cl. 360—27 **12 Claims**

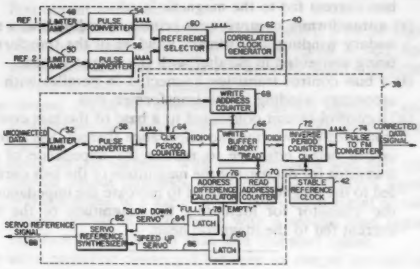
1. A method for recovering a frequency modulated analog information signal recorded on an information storage medium subject to time base recovery errors, said method comprising the steps of:

generating a clock signal correlated with said information signal;

measuring periods between zero crossings of said information signal with a clock whose rate is based on said correlated clock signal to produce accurate values representative of said periods between zero crossings;

serially storing said values;

thereafter serially retrieving said stored values at a clock rate based on a stable reference clock; and



reconstructing said information signal from said retrived values by modulating the period between zero crossings of a carrier signal which is derived from a stable reference clock.

4,353,100
MAGNETIC RECORDING SYSTEM WITH SIGNAL-CONTROLLED BIAS AND EQUALIZATION

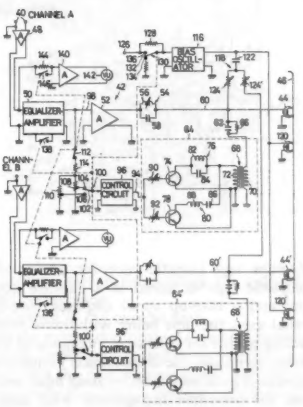
Hideo Inoue, Mitaka, Japan, assignor to Teac Corporation, Tokyo, Japan

Filed Aug. 11, 1980, Ser. No. 176,710

Claims priority, application Japan, Aug. 31, 1979, 54-111858; Nov. 8, 1979, 54-144833

Int. Cl.³ G11B *5/45, 5/47*

U.S. Cl. 360—65 **6 Claims**



1. A magnetic recording system for recording information signals on magnetic record media, comprising:

(a) a magnetic head for magnetically recording an information signal on a magnetic record medium;

(b) an information signal processing circuit coupled to the magnetic head for processing the incoming information signal prior to delivery to the magnetic head, the information signal processing circuit including:

(1) equalizer means for increasing the level of the information signal at high frequencies; and

(2) current-regulating impedance means for holding substantially constant the current flowing to the magnetic

head irrespective of changes in the impedance of the magnetic head;

(c) a bias oscillator for feeding to the magnetic head a bias current having a frequency higher than the spectrum of the information signal;

(d) impedance means connected between the bias oscillator and the magnetic head for setting the magnitude of the bias current fed to the magnetic head;

(e) a transformer comprising a primary winding and a secondary winding, the primary winding of the transformer being connected in parallel with the magnetic head;

(f) a bias control transistor connected in parallel with the secondary winding of the transformer; and

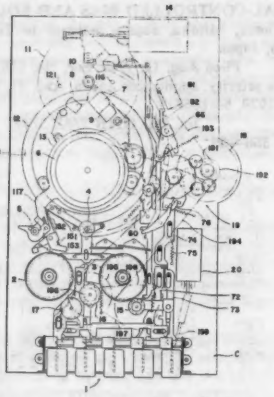
(g) a control circuit connected to a base of the bias control transistor for varying the impedance thereof, the control circuit being effective to reduce the impedance of the transistor for decreasing the magnitude of the bias current fed to the magnetic head and to increase the impedance of the transistor for increasing the magnitude of the bias current fed to the magnetic head.

4,353,101

VIDEO TAPE RECORDER

Tsutomu Kawai, Yokosuka, Japan, assignor to Funai Electric Co., Ltd., Osaka and Efuti Giken Co., Ltd., Yokohama, both of, Japan

Filed May 8, 1980, Ser. No. 147,831
Int. Cl.³ G11B *15/66, 23/04*
U.S. Cl. 360—85 **22 Claims**



1. A videotape tape cassette recorder device of the type wherein magnetic tape is stored in a cassette containing a supply spool and a take-up spool disposed side-by-side on spaced parallel axes, the tape being withdrawn from the cassette by loading means for operative engagement with rotary video transducing means, the combination comprising:

audio transducer head means and erasing head means fixedly mounted for operative engagement with said magnetic tape when withdrawn from said cassette;

capstan means for driving said tape when withdrawn from said cassette;

said rotary video transducing head means being rotatable about an axis parallel with the axes of said spools and disposed generally between said spools and the group comprising the audio transducing head means and erasing head means;

said loading means comprising pinch roller means and take-out pin means;

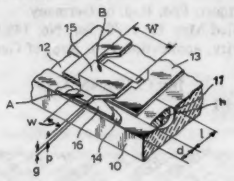
and means to move said pinch roller means and take-out pin means in respective arcuate paths in opposite directions from an unloaded position within a cassette to a loaded position to withdraw tape from the cassette and wrap a portion of tape around a portion of the circumference of the video transducer head means in a helical path and into said operative engagement with the audio transducer head means, erasing head means and capstan means.

4,353,102

THIN-FILM MAGNETIC HEAD

Kenji Kanai, Neyagawa; Nobuyuki Kaminaka, Moriguchi; Noboru Nomura, Kyoto, and Norimoto Nouchi, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jul. 3, 1980, Ser. No. 165,941
Claims priority, application Japan, Jul. 4, 1979, 54-85202; Nov. 20, 1979, 54-151046
Int. Cl.³ G11B *5/22, 5/20, 5/25*
U.S. Cl. 360—126 **5 Claims**



1. A thin film magnetic head comprising a base of magnetic material, a magnetic core layer forming a head core structure in conjunction with said base so as to provide an operating gap portion at the front end of the head, and a rear junction at the rear end of the magnetic core layer, and a conductor layer forming a winding of the head for activating said head core structure;

wherein said magnetic core layer has a smaller width at said operating gap portion and a larger width at a back region which crosses over said conductor layer, the thickness of the magnetic core layer being substantially constant; and

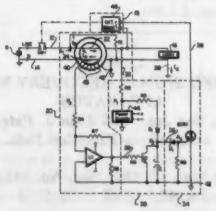
wherein a groove is formed in said base, said groove being filled with a non-magnetic material above which said magnetic core layer and said conductor layer cross each other.

4,353,103

GROUND FAULT INTERRUPTER CIRCUIT

George A. Whitlow, Box CL96-1, Murchison, Tex. 75778

Filed Apr. 8, 1981, Ser. No. 252,149
Int. Cl.³ H02H *3/16*
U.S. Cl. 361—45 **28 Claims**



1. A ground fault interrupter circuit for use in a power distribution system that interrupts the current flow therein whenever a ground fault current exceeding a predetermined value is detected, said ground fault interrupter circuit comprising:

a pair of conductors for connecting a load across an input circuit of alternating current, a first conductor of said pair

of conductors having an alternating line voltage thereon and a second conductor of said pair of conductors having a zero voltage thereon with respect to a ground reference potential, said second conductor therefore being the return or neutral conductor;

switch means capable of opening at least said first conductor of said pair of conductors for preventing current from being delivered to said load from said input circuit in response to a trigger signal;

differential current sensing means for sensing the difference between the current flowing through said first conductor at a first coupling point thereof and the current returning through said second conductor at a second coupling point thereof, and for generating a control signal that is a function of said instantaneous difference;

charging circuit means coupled to said pair of conductors for charging a storage element with an electrical charge during at least a portion of each cycle of said alternating current in response to a first condition of said control signal, said first condition indicating that the difference sensed by said differential current sensing means is at least as great as said predetermined value of ground fault current, and for discharging said storage element during at least a portion of each cycle of said alternating current in response to a second condition of said control signal, said second condition indicating that said difference sensed by said differential current sensing means is less than said predetermined value of ground fault current; and

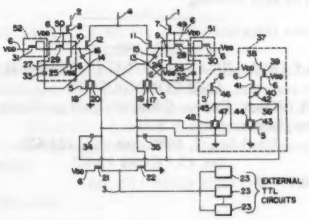
trigger means coupled to said charging circuit means for generating said signal whenever a predetermined value of electrical charge accumulates on said storage element.

4,353,104

OUTPUT INTERFACE CIRCUITS

Tanaka Takayuki, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Jun. 17, 1981, Ser. No. 274,372
Claims priority, application Japan, Jun. 27, 1980, 55-86509
Int. Cl.³ H02H *3/20*
U.S. Cl. 361—91 **2 Claims**



1. An output interface circuit comprising:

a first MOS FET having a source electrode, a drain electrode connected to a first MOS level signal input terminal, and a gate electrode connected to a first source of fixed voltage;

a second MOS FET having a source electrode, a drain electrode connected to a second MOS level signal input terminal, and a gate electrode connected to said first source of fixed voltage;

a third MOS FET having a source electrode connected to a first output terminal, a gate electrode connected to the source electrode of said first MOS FET, and a drain electrode connected to a first start signal input terminal;

a fourth MOS FET having a source electrode connected to a second output terminal, a gate electrode connected to the source electrode of said second MOS FET, and a drain electrode connected to said first start signal input terminal;

a first capacitor connected between the gate and source electrodes of said third MOS FET;

a second capacitor connected between the gate and source electrodes of said fourth MOS FET;

a first transfer gate circuit for executing a NOR logic function of a reset signal and a signal at said second output terminal, and having an output terminal connected to said first output terminal;

a second transfer gate circuit for executing a NOR logic function of said reset signal and the signal at said first output terminal and having an output terminal connected to said second output terminal;

an output circuit for selectively converting signals at said first and second output terminals into a TTL level output signal;

a delay circuit supplied with said signals at said first and second output terminals for outputting a delayed signal corresponding to a logic "1" of said output signal of said output circuit in accordance with a second start signal inputted thereto earlier than said first start signal;

a third capacitor connected between an output terminal of said delay circuit and said second output terminal;

a level holding circuit comprising a capacitor and a pair of MOS FETs for compensating for a decrease in a gate potential of said fourth MOS FET, said level holding circuit being connected across said second capacitor so as to render said fourth MOS FET nonconductive; and

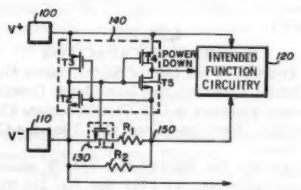
a protective circuit means, operatively connected to said pair of MOS FETs in said level holding circuit for preventing damage to said MOS FETs in said level holding circuit by limiting the voltage levels thereof.

4,353,105

CMOS LATCH-UP PROTECTION CIRCUIT

William C. Black, Berkeley, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Dec. 8, 1980, Ser. No. 214,401
Int. Cl.³ H02H *9/04*
U.S. Cl. 361—101 **5 Claims**



1. A protection circuit for limiting the current flow in a current path comprising:

a first resistance in the current path;

series circuit means comprising a second resistance and a first MOS transistor, the series circuit means coupled in parallel with the first resistance, the first MOS transistor for selectively providing a current path through the series circuit means in response to a control signal and for interrupting the current path through the series circuit means otherwise;

means for providing a first voltage and means for providing a second voltage wherein the first resistance has one terminal coupled to the means for providing said first voltage; and

a first load having first and second terminals, the first terminal coupled to the means for providing a second voltage and the second terminal coupled to the other terminal of said first resistance said second terminal also being coupled to the gate of the first MOS transistor by way of a second MOS transistor acting as an inverter and wherein the first load means is coupled in series with said first

resistance and coupled for applying the control signal to the first MOS transistor in response to the voltage across the first resistance being less than a threshold voltage and for not applying the control signal to the first MOS transistor otherwise.

4,353,106

TRIMMER CAPACITOR

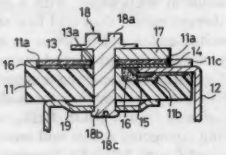
Takashi Shirakawa, Morioka, Japan, assignor to Alps Electric Company, Ltd., Tokyo, Japan

Filed Jul. 31, 1980, Ser. No. 174,229

Claims priority, application Japan, Jul. 31, 1979, 54-105844[U]

Int. Cl.³ H01G *5/06*

U.S. Cl. 361—293 **3 Claims**



1. In a trimmer capacitor comprising a rotor electrode, a stator electrode, and a ceramic dielectric member held on an insulating substrate, the rotor electrode being rotatably supported, and the stator electrode and the rotor electrode having a confronting area therebetween changed by rotation of the rotor electrode, the improvement wherein the stator electrode is formed by printing conductive paste onto the dielectric member and a terminal is connected electrically and mechanically to said stator electrode by soldering, said dielectric member and terminal fitting within recesses in the insulating substrate and held therein by adhesive.

4,353,107

ELECTRICAL CAPACITOR

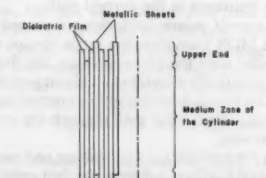
Jean-Yves Decroix, Arras; Gerard Seytre, Sainte-For-les-Lyon; Pierre Charlot, Quetigny, and Jean-Claude Dubois, Cressely, all of France, assignors to CdF Chimie, Societe Chimique des Charbonnages, Bully-les-Mines and Thomson-CSF, Paris, both of, France

Continuation of Ser. No. 948,589, Oct. 4, 1978, abandoned. This application Feb. 17, 1981, Ser. No. 234,502

Claims priority, application France, Oct. 5, 1977, 77 29986

Int. Cl.³ H01G *4/20*

U.S. Cl. 361—323 **10 Claims**



1. An electrical capacitor comprising conductive electrodes and a dielectric spacer between the electrodes, said spacer comprising a biaxially oriented film made from a mixture of 5 to 80 percent by weight of isotactic polypropylene and 20 to 95 percent by weight of isotactic polybutene-1.

4,353,108

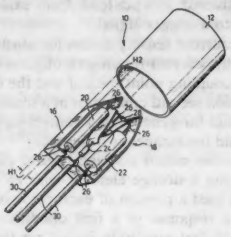
FRAME ASSEMBLY FOR ELECTRONIC COMPONENTS

Bob M. Chippel, Toronto, Canada, assignor to Canadian General Electric Company Limited, Toronto, Canada

Filed Oct. 6, 1980, Ser. No. 194,053

Int. Cl.³ H05K *7/20*

U.S. Cl. 361—386 **8 Claims**



1. A potted electronic circuit component assembly comprising:

a shell-type metal housing having curving walls,

discrete electronic components within the housing having wire leads and connected in a circuit,

a frame structure formed of a thin strip of dielectric material having two opposing major portions surrounding said components, the edges of the strip in said major portions engaging the walls of the housing to locate the structure within the housing and assure space between the curving wall and the strip portions,

said strip of dielectric material having V-shaped slots cut therein from an edge and terminating in apertures accommodating said wire leads to support said components in a spaced-apart, non-contacting and electrically insulating manner relative to the walls of said housing,

and an electrically insulating and thermally conductive compound filling the empty spaces within said housing to provide heat transfer between said components and the walls of said housing.

4,353,109

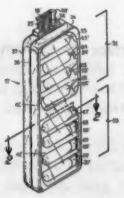
FLASH LAMP ARRAY HAVING COMBINED SHIELD AND CONNECTOR

Vincent H. Weber, Parma, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 2, 1980, Ser. No. 183,625

Int. Cl.³ G03B *15/02*

U.S. Cl. 362—13 **4 Claims**



1. A photoflash lamp array comprising a circuit board provided with a set of first and second terminals for connection to a source of lamp-firing voltage pulses, a plurality of flash lamps arranged in a planar configuration, forwardly of said circuit board, and an electrically conductive shield positioned behind and parallel to said circuit board, wherein the improvement comprises a circuit run on said board which directly connects said first terminal with one lead-in wire of a first one of said lamps only, said one lead-in wire and also a lead-in wire of each

of the other lamps extending rearwardly and contacting said shield, whereby said lead-in wire of each lamp and said shield are electrically connected to said first terminal, said circuit board being devoid of circuit runs to said lead-in wires of each lamp other than said first lamp.

4,353,110

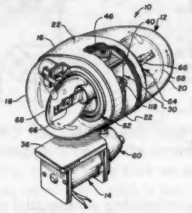
SEARCH AND WARNING LIGHT SYSTEM

Richard D. Ellis, 6714 Dudley Ave., Minneapolis, Minn. 55428

Filed Sep. 12, 1980, Ser. No. 186,828

Int. Cl.³ F21V *21/30*

U.S. Cl. 362—35 **13 Claims**



1. A search and warning light system comprising, in combination: at least a first lamp assembly for emitting a beam of light; first means for rotating the first lamp assembly about a horizontal axis; second means for rotating the first lamp assembly about a vertical axis; and third means for providing electric connection to the lamp assembly and the first and second means allowing the lamp assembly to be used as a search light with the direction of the beam of light being changeable by slow rotation of the lamp assembly about its vertical and/or horizontal axis by the first and second means and allowing the lamp assembly to be used as a warning light by rotating the lamp assembly about its vertical and/or horizontal axis by the first and second means.

4,353,111

MOTOR VEHICLE WITH A REARWARD SWING-UP BODY MEMBER

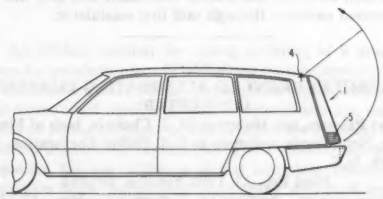
Josef Gallitzendörfer; Gerard Cardiet, and Johann Tomforde, all of Sindelfingen, Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Dec. 1, 1980, Ser. No. 211,902

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1979, 2948524

Int. Cl.³ B60Q *1/00*

U.S. Cl. 362—80 **9 Claims**



1. A motor vehicle comprising a rearward body end member adapted to be swung upwardly about a transverse axis of the vehicle, the body end member consisting essentially of a synthetic resin and including a rear window and an end wall, characterized in that the lighting elements are arranged on a side of the body end member facing an interior of the vehicle, and in that the body end member has a transparent zone in the area of the lighting elements for defining light-emitting areas for the lighting elements.

4,353,112

SWITCHED-MODE VOLTAGE CONVERTER

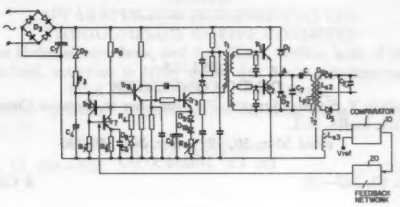
Jan J. Rietveld, Eindhoven, Netherlands, and Alain Moreau, Puteaux, France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 4, 1979, Ser. No. 72,261

Claims priority, application Netherlands, Sep. 11, 1978, 7809226

Int. Cl.³ H02M *3/335*

U.S. Cl. 363—16 **23 Claims**



1. A switched-mode converter for converting an input DC voltage into an output DC voltage comprising, an input terminal for connection to a source of input DC voltage, an inductive network, a signal generator coupled to the input terminal and arranged to apply to said inductive network a periodic square-wave signal of substantially constant duty cycle whose amplitude depends on the input voltage, a rectifier, a smoothing capacitor, means coupling the rectifier and capacitor to the inductive network so that a smoothed voltage is present across the capacitor, an output terminal for said DC output voltage coupled to said capacitor, and means responsive to the input DC voltage at the input terminal for controlling the frequency of the generated square-wave signal in dependence on the input DC voltage so that the product of the input DC voltage and the period T of the square-wave signal exhibits a predetermined characteristic relative to a variation of the input DC voltage at said input terminal.

4,353,113

SWITCH MODE CONVERTERS

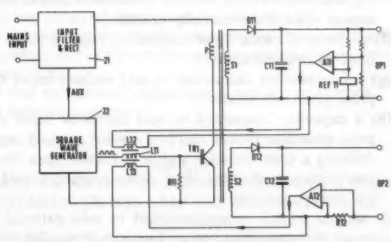
Keith H. Billings, Ilfracombe, England, assignor to Electrotech Instruments Limited, Devon, England

Filed Mar. 20, 1981, Ser. No. 245,660

Claims priority, application United Kingdom, Mar. 21, 1980, 8009706

Int. Cl.³ H02M *3/335*

U.S. Cl. 363—21 **8 Claims**



1. A magnetic amplifier having a main winding and at least one secondary reset winding, and a core composed of amorphous magnetic material, the amplifier being arranged to operate at a frequency greater than 20 KH_z, wherein the amor-

phous magnetic material has the following characteristics measured at a frequency of 35 KH_z:

(i) a remanence ratio B_R/B_S greater than 0.7, where B_R is the remanence and B_S the magnetic flux at notional saturation;

(ii) a post-saturation permeability $\Delta B/\Delta H$ of less than 1000, when measured at a magnetic field strength of $H=1$ ampere turn per cm., where the flux B is measured in Tesla;

(iii) a permeability $\Delta B/\Delta H$ of greater than 50,000 when measured at magnetic flux $B=0$, using units of Tesla and ampere turns per cm.; and

(iv) a coercivity such that the high frequency power loses of the core are less than 100 watts per kg of core material measured at a maximum flux of 0.4 Tesla.

4,353,114

DC/DC CONVERTER

Mustafa Y. Saleh, Margate, Fla., assignor to Siemens Corporation, Iselin, N.J.

Filed Mar. 30, 1981, Ser. No. 249,390

Int. Cl.³ H02M *3/335*

U.S. Cl. 363—21 **8 Claims**

FIG. 1A	FIG. 1B

1. A DC/DC converter for converting an input voltage of one magnitude into at least one output voltage of a different magnitude, said converter comprising, in combination:

(a) a transformer having a primary winding and at least one secondary winding;

(b) pulse generator means for producing a train of pulses of variable pulse width, said pulse generator means having a first control input and inputs for a resistor and a capacitor, respectively, said resistor and capacitor defining a time constant for the pulse repetition period of said train of pulses;

(c) first switch means, connected to said pulse generator means, for switching at least a portion of said input voltage across said primary winding in response to the receipt of said pulses;

(d) rectifier and filter means, connected to said at least one secondary winding, for producing at least one rectified and filtered first output voltage of a prescribed magnitude that is dependent upon the pulse widths of said pulses;

(e) first voltage sensor means, connected to said first control input of said pulse generator means, for deriving a signal dependent upon said at least one output voltage and applying said signal to said pulse generator means for varying said pulse widths, thereby to maintain said at least one output voltage substantially constant;

(f) an external clock input adapted to receive clock pulses from an external source;

(g) a first resistor connected to said resistor input of said pulse generator means;

(h) a capacitor connected to said capacitor input of said pulse generator means, said first resistor and said capacitor defining a time constant which is greater than the pulse repetition period of the clock pulses applied to said external clock input; and

(i) second switch means, coupled to said external clock input, for connecting a second resistor in parallel with said first resistor in response to the receipt of clock pulses from said external clock input, thereby reducing said time constant and synchronizing the pulse repetition period of said pulse generator means with that of the clock pulses applied to said external clock input.

4,353,115

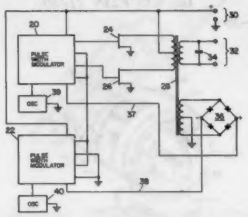
APPARATUS FOR SYNTHESIZING A SINUSOIDAL OUTPUT

Ray Ruble, Torrance, and Werner S. Treitel, Woodland Hills, both of Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Continuation of Ser. No. 134,828, Mar. 28, 1980, abandoned. This application Jun. 22, 1981, Ser. No. 276,275

Int. Cl.³ H02P *13/20*

U.S. Cl. 363—42 **19 Claims**



1. Apparatus for synthesizing a sinusoidal output, comprising:

first and second switching means;

transformer means having a primary winding with a center tap and first and second input terminals at the opposite ends thereof, and secondary and tertiary windings, said secondary winding have third and fourth output terminals at the opposite ends thereof;

capacitance means connected across said output terminals;

rectification means connected across said tertiary winding;

a source of power connected to the center tap of said primary winding, thence to said first and second switching means via said opposite ends of said primary winding and thence to ground to establish a sinusoidal signal across said output terminals due to the resonance of said secondary winding and said capacitance means;

first and second pulse width modulators;

a less than unity gain, positive feedback loop circuit connected from said rectification means to said second pulse width modulator and thence to said first pulse width modulator; and

a high gain, negative feedback loop circuit connected from said rectification means to said first pulse width modulator to control said first and second switching means and thereby provide feedback control of the sinusoidal output voltage amplitude across said output terminals by using said sinusoidal voltage output as its own reference signal, and the shape of said sinusoidal output across said output terminals being controlled by said positive feedback loop which controls said second modulator and said first and second switches through said first modulator.

4,353,116

DIRECT CURRENT TO ALTERNATING CURRENT CONVERTER

Hilbert Palmers, and Hubertus M. J. Chermin, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 23, 1981, Ser. No. 237,052

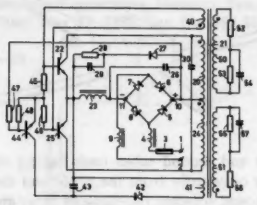
Claims priority, application Netherlands, Mar. 17, 1980, 8001557

Int. Cl.³ H02M *7/537*

U.S. Cl. 363—133 **18 Claims**

1. A direct current to alternating current converter comprising two input terminals for connection to a source of direct current, an output transformer, means connecting the two input terminals to a first series arrangement including at least a first transistor and a first primary winding of the transformer and by a second series arrangement including at least a second

transistor and a second primary winding of the transformer, a third winding of the transformer connecting the base of the first transistor directly to the base of the second transistor, a control circuit coupled to the base electrodes of the two transistors, an auxiliary d.c. voltage source coupled to the control circuit so that the control circuit is predominantly supplied



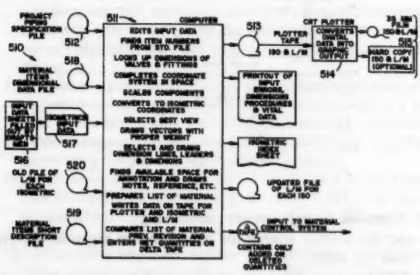
from said auxiliary d.c. voltage source, the combination of the auxiliary d.c. voltage source and the control circuit comprising a current blocking means such that an instantaneous voltage between the input terminals which is less than 5% of the rated effective voltage between those terminals causes the auxiliary d.c. voltage source to supply substantially no current to the control circuit.

4,353,117

METHOD OF DIAGNOSING ERRORS OFF-LINE IN PIPE SPECIFICATION FILES OF A COMPUTER-AIDED GRAPHICS SYSTEM

Richard A. Spellmann, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Dec. 28, 1979, Ser. No. 108,267
Int. Cl.³ G06F *15/56*
U.S. Cl. 364—300 **4 Claims**



1. An off-line method for aiding updating of a graphical system for producing in a plane having two-dimensional pipeline coordinate axes, a planar, axonometric representation of a three-dimensional pipeline in which material and non-material aspects of piping elements of said pipeline are associated with a multibit digital code representative of a series of workpoints compatible for use within a digital computer system, said workpoints being paired into overlapping sets, each set containing dominant and subservient points having known coordinates with respect to intersecting axes X, Y and Z, and being identified in relative three-dimensional coordinates by a distance (d) between points and values of angles of a straight line intersecting them as related to orthogonal planes of reference, comprising:

(A) by means of said digital computer system, storing and sorting pipe specification information about said pipeline both as (i) machine readable data words or portions of words, and (ii) as a function of field locations within a preselected data format for operation within said system;

(B) by means of said digital computer system, inputting off-line updated pipe specification data in said format on an iterative basis;

(C) by means of said digital computer system, comparing said updated pipe specification data with said stored and sorted pipe specification data; and

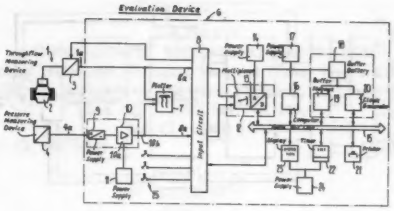
(D) by means of said digital computer system, indicating correctness of said compared data whereby errors associated with said updated pipe specification data, can be determined and then corrected, off-line.

4,353,118

APPARATUS FOR DETERMINING THE THROUGHFLOW IN PIPE CONDUITS

Hans Heimgartner, Jona, and Karl Wirz, Meilen, both of Switzerland, assignors to Hány & Cie AG, Meilen, Switzerland

Filed Jul. 14, 1980, Ser. No. 168,061
Claims priority, application Switzerland, Aug. 3, 1979, 7131/79
Int. Cl.³ G01F *7/00*
U.S. Cl. 364—510 **17 Claims**



1. An apparatus for determining the rate of flow of a medium conveyed with varying velocity through at least one pipe conduit by means of a pump device, comprising:

a flow rate measuring device arranged in the pipe conduit and generating measuring value signals corresponding to the rate of flow of the medium through the pipe conduit;

an evaluation device connected to the flow rate measuring device for processing the measuring value signals; and

means for the indication of the quantity of medium conveyed through the pipe conduit both as a function of time and the total quantity of medium;

said evaluation device containing a computer for adding the received measuring value signals and generating at certain time intervals, based upon the addition of such received measuring value signals, first output signals corresponding to the total quantity of conveyed medium and generating in each of successive time periods second output signals by forming a mean value based upon the measuring value signals received during a given time period;

said second output signals being characteristic of the momentary rate of flow of the medium during said given time period; and

said first and second output signals serving to control said indication means.

4,353,119

ADAPTIVE ANTENNA ARRAY INCLUDING BATCH COVARIANCE RELAXATION APPARATUS AND METHOD

Sam M. Daniel, Tempe, and Louis A. McRoberts, Scottsdale, both of Ariz., assignors to Motorola Inc., Schaumburg, Ill.

Filed Jun. 13, 1980, Ser. No. 159,027
Int. Cl.³ H04B *7/00*; G06F *15/20*
U.S. Cl. 364—517 **12 Claims**

1. In the general statement $Cw+b=0$ for a system of N

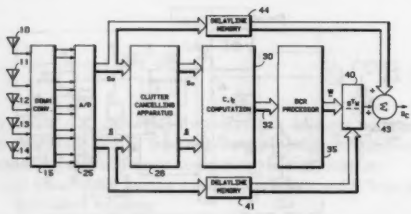
complex equations, where C is an N×N complex Hermitian covariance matrix of a first set of N signals and b is a complex forcing N-vector produced by the cross-correlation between the first set of N signals and a second signal, apparatus providing a signal representative of a near optimum value of the complex weight vector w comprising:

(a) input storage means for storing signals representative of C and b therein;

(b) vector storage means including separate storage areas for signals representative of the complex weight vector w, a complex residual vector r, a complex relaxation vector p, and the matrix-vector product Cp and output means for selectively supplying any one of these signals upon command;

(c) arithmetic means having two inputs and an output for selectively adding and subtracting signals on the two inputs upon command and supplying a signal representative of the addition or subtraction at the output;

(d) a central processing unit having multiplying means for multiplying vectors and scalars, said multiplying means having two inputs and means for conjugating signals applied to one of the inputs, said central processing unit further having summing means with an input connected to an output of said multiplying means;



(e) division means having a divisor input, a dividend input and an output;

(f) scalar storage means including output means for selectively supplying any one of the stored signals upon command; and

(g) means including timing controls for selectively coupling the signals representative of C and b to one input of said arithmetic means and to either input of said multiplying means, for coupling the output means of said vector storage means to the one input of said arithmetic means and to the inputs of said multiplying means, for coupling the output of said arithmetic means to the vector storage means, for coupling an output of said multiplying means to the second input of said arithmetic means, for selectively coupling an output of said summing means to said vector storage means, the divisor and dividend inputs of said division means and the scalar storage means and for selectively coupling the output means of said scalar storage means to the divisor and dividend inputs of said division means, either of the two inputs of said multiplying means and the one input of said arithmetic means in a proper sequence to provide an output signal representative of a near optimum value of w.

4,353,120

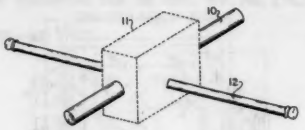
LOW-FREQUENCY SOUND SOURCE FOR TOWED ARRAY CONDITION APPRAISER SYSTEM (TACAS)

George O. Pickens, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 2, 1981, Ser. No. 250,523
Int. Cl.³ H04R *29/00*
U.S. Cl. 367—13 **11 Claims**

1. In an apparatus for enabling an in situ determination of operational parameters of an elongate array of spaced acoustic elements covered by a hose-like sheath on which a longitudinally displaceable member is adapted to travel, an improvement therefor is provided comprising:

means mounted on the longitudinally displaceable member for ensonifying the spaced acoustic elements with acoustic energy in the low frequency range as it moves along the array, the low frequency ensonifying means is provided



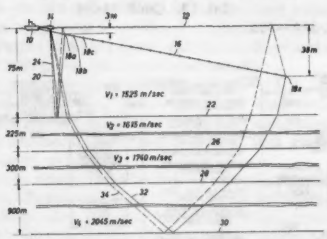
with first and second tubes each having one open end extending outwardly from the array and the other open end positioned adjacent the elongate array and a projector of acoustic energy is disposed in each tube to ensonify the spaced acoustic elements with low frequency acoustic energy.

4,353,121

HIGH RESOLUTION, MARINE SEISMIC STRATIGRAPHIC SYSTEM

Clifford H. Ray, and Neil A. Moore, both of Houston, Tex., assignors to Fairfield Industries, Inc., Houston, Tex.

PCT No. PCT/US80/00925, § 371 Date Jul. 24, 1980, § 102(e) Date Jul. 24, 1980, PCT Pub. No. WO82/00365, PCT Pub. Date Feb. 4, 1982
PCT Filed Jul. 24, 1980, Ser. No. 179,283
Int. Cl.³ G01V *1/36, 1/38*
U.S. Cl. 367—21 **23 Claims**



1. A marine seismic system comprising

a moving seismic source for producing an acoustic wavelet into the water,

a detector towed by a vessel moving synchronously with said source, comprising

a streamer including a plurality of hydrophone arrays spaced along its length,

buoyancy means provided to said streamer so as to provide a different depth below the water surface for each of the hydrophone arrays,

each of said arrays detecting primary reflections directly from subsurface interfaces and ghost reflections from the air-water interface, the time difference between primary reflections and ghost reflections being different for each hydrophone array in the streamer, and

primary reflection correction means for correcting the primary reflections to a datum, gathering data traces into common depth point files, applying NMO corrections to substantially align the primary reflections and in so doing misalign the ghost reflections, and stacking the common depth point traces in said common depth point files, thereby substantially deemphasizing the appearance of the

ghost reflections, while emphasizing the primary reflections.

4,353,122

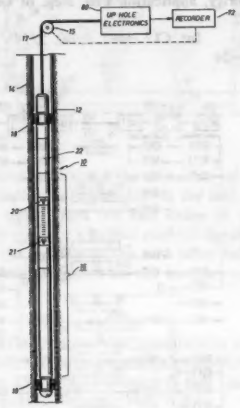
DIFFERENTIAL NOISE LOGGING METHOD AND APPARATUS

Walter E. Cubberly, Jr., Houston, Tex., assignor to Schlumberger Technology Corporation, Houston, Tex.

Filed May 19, 1980, Ser. No. 151,386

Int. Cl.³ G01V *1/40*

U.S. Cl. 367—25 **9 Claims**



1. Borehole noise logging apparatus comprising:

(a) a mandrel adpated for movement along a borehole,

(b) at least two acoustic transducers cylindrically disposed about said mandrel in an oil filled annulus between the mandrel and a thin tubular metal diaphragm cylindrically surrounding the mandrel, and spaced a predetermined distance from one another for generating electrical noise signals proportional to noise in the borehole at each transducer,

(c) a rubber covering about the metal diaphragm surrounding each acoustic transducer and extending along a portion of the entire axial extent of each acoustic transducer,

(d) circuit means for high pass filtering each noise signal and generating respective filtered noise signals,

(e) root-mean-square circuit means responsive to the respective filtered noise signals for generating RMS noise signals proportional to the RMS value of each filtered noise signal,

(f) differential amplifier means for generating a difference noise signal proportional to the difference between the RMS noise signals, and

(g) means for transmitting the difference noise signal to surface instrumentation for recording as a function of depth in the borehole.

4,353,123

ULTRASONIC TRANSMITTER

Helmut Rost, Uttenreuth, and Alfred Walz, Burgthann, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

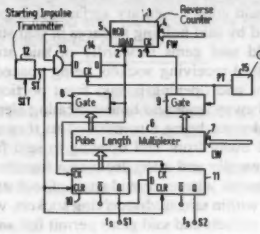
Filed Jan. 23, 1981, Ser. No. 227,995

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1980, 3006106

Int. Cl.³ G01S *7/52*; G10K *11/00*

U.S. Cl. 367—137 **17 Claims**

1. An ultrasonic transmitter for operating ultrasonic transducers, said transmitter comprising a pulse generator for supplying excitation pulses, the pulse generator comprising a digital frequency control member (1) for controlling the pulses to be supplied to an ultrasonic transducer element, said digital frequency control member (1) having circuit means whereby at least the pulse frequency (fs) is selectable in response to an input digital value (FW), and said circuit means comprising a



second digital control member (6) responsive to a second input digital value (LW) to determine the number of pulses to be supplied to an ultrasonic transducer element within an excitation phase, thereby also to determine the total duration of an excitation of such ultrasonic transducer element.

4,353,124

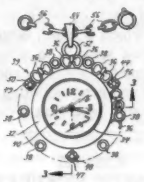
ORNAMENTAL MOUNTING FOR WATCH

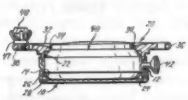
Michael Weinzettel, St. Louis, Mo., and Walter Weeks, Collinsville, Ill., assignors to Eisenstadt Company, St. Louis, Mo.

Filed Jul. 7, 1980, Ser. No. 166,484

Int. Cl.³ G04B *37/00*

U.S. Cl. 368—258 **11 Claims**





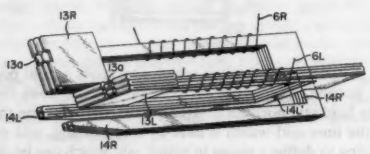
1. A housing for a watch which comprises a front portion, a rear portion, interacting surfaces on said portions that normally hold said portions in fixedly-assembled relation throughout the time said watch is held by said housing, said portions coacting to define a recess in which said watch can be disposed and held when said portions are in assembled relation, said front portion having an opening therein through which the time-indicating elements of said watch can be viewed while said interacting surfaces on said portions hold said portions in fixedly-assembled relation, an annular gallery which is fixedly secured to and which fixedly projects laterally outwardly from one of said portions, said annular gallery being spaced outwardly relative to said opening in said front portion to assure ready viewing of said time-indicating elements of said watch while said interacting surfaces on said portions hold said portions in fixedly-assembled relation, said annular gallery comprising a plurality of filigree-forming elements that coact to provide an ornamental filigree-like configuration for said annu-

lar gallery, some of said filigree-forming elements being stud-receiving sockets with holding surfaces therein which are formed and dimensioned to accommodate and to hold complementary surfaces on the studs of stud-type gem mountings which have gems projecting forwardly from the fronts thereof and which have the studs thereof extending rearwardly therefrom to have said complementary surfaces thereon disposable within and held by said holding surfaces in said stud-receiving sockets to hold said gems forwardly of said stud-receiving sockets, said stud-receiving sockets being spaced outwardly and away from said opening in said front portion and hence outwardly and away from said time-indicating elements of said watch and said gems being dimensioned so they are disposed outwardly and away from said opening in said front portion and hence outwardly and away from said time-indicating elements of said watch whenever said studs of said stud-type gem mountings are within said stud-receiving sockets, whereby said stud-receiving sockets and said gems permit full and free viewing of said time-indicating elements of said watch while said interacting surfaces on said portions hold said portions in fixedly-assembled relation, said stud-receiving sockets being displaced circumferentially from each other, whereby one or more of said stud-type gem mountings can be disposed at different locations circumferentially of said annular gallery to dispose one or more of said gems at different locations circumferentially of said annular gallery, said annular gallery enclosing said watch by enclosing said opening in said front portion, whereby said annular gallery can make said watch a center of interest within a gem-studded filigree-like annular gallery, each of said stud-receiving sockets having filigree-forming elements adjacent thereto so said stud-type gem mountings hold said gems adjacent exposed and visible filigree-forming elements of said annular gallery whenever said complementary surfaces on said studs are disposed within and held by said holding surfaces in said stud-receiving sockets, said annular gallery having an area which is much larger than the area of any of said stud-receiving sockets so substantial portions of said filigree-forming elements will be exposed to view even after the stud of a stud-type gem mounting is disposed within and held by one of said stud-receiving sockets.

4,353,125
ELECTROMAGNETIC PICKUP CARTRIDGE

Masashi Itoh, Settsu, and Kazuo Teramae, Moriguchi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 19, 1980, Ser. No. 208,297
Claims priority, application Japan, Nov. 29, 1979, 54-155373
Int. Cl.³ H04R 11/12
U.S. Cl. 369—136 7 Claims



1. An electromagnetic pickup cartridge comprising:

U-shaped right-channel and left-channel yokes having an open end and a base portion formed from an apertured magnetic thin strip in the form of a rectangular frame folded many times over itself;

coils mounted on said right-channel and left-channel yokes, respectively;

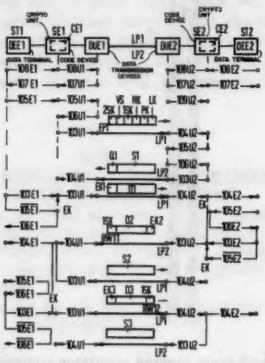
said right-channel and left-channel yokes with the coils being disposed along the axis of the maximum sensitivity of the right- and left-channels wherein the base portions of said right-channel and left-channel yokes cross each other, and

an armature disposed within each of said right-channel and left-channel yokes adjacent to the open end thereof.

4,353,126
METHOD FOR CODED DATA TRANSMISSION IN HALF-DUPLEX OPERATION BETWEEN DATA TERMINAL EQUIPMENT OF TWO DATA STATIONS

Eduard Bergmann, Luedenscheid, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 3, 1980, Ser. No. 165,792
Claims priority, application Fed. Rep. of Germany, Jul. 19, 1979, 2929252
Int. Cl.³ H04L 9/00, 5/14
U.S. Cl. 370—24 5 Claims



1. A method for coded data transmission in half-duplex operation between data terminal devices of two data stations, in which a first code device in a first data station transmits a phase-in program to a second code device of the second data station, and in which the second code device responds with an acknowledgement, the improvement therein comprising the steps of:

transmitting between the first and second code devices, via respective first and second data transmission devices, in full-duplex operation;

phasing-in first and second crypto units in the respective first and second data stations; and

after phase-in of the crypto units, transmitting change of direction programs, data and end identification in one transmission direction and simultaneously transmitting synchronizing signals in the opposite direction.

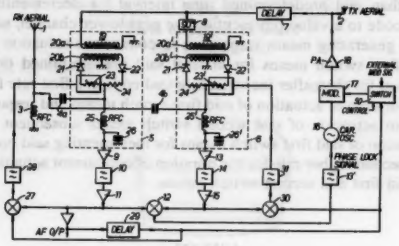
4,353,127
DUPLEX TRANSCEIVER ARRANGEMENTS FOR REBROADCAST OF SIGNALS

Christopher K. Richardson, Romsey, England, assignor to Plessey Handel und Investments AG, Zug, Switzerland

Filed Jun. 2, 1980, Ser. No. 155,763
Claims priority, application United Kingdom, Jun. 8, 1979, 7919963
Int. Cl.³ H04J 1/00; H04L 5/14
U.S. Cl. 370—32 9 Claims

1. A duplex transceiver comprising a receiver aerial and a transmitter aerial, a pair of balanced mixers each fed from the transmitter aerial and from the receiver aerial, a phase quadrature device interposed in a signal path between one of the said aerials and one of the said balanced mixers, a multiplier fed from the said mixers, an oscillator/modulator arrangement feeding the transmitter aerial and phased locked to the frequency of a received carrier signal by means of a phase control signal fed from the multiplier, a first phase detector fed from

that one of the balanced mixers which is fed via the phase quadrature device, a delay device via which the said first phase detector is fed also from the other of the balanced mixers thereby to provide a just control signal which is fed back to control the balance of the said one balanced mixer, and a



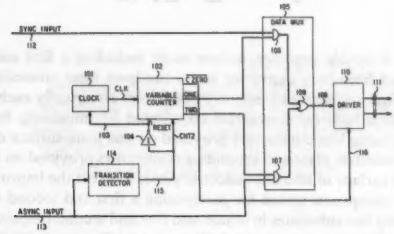
second phase detector fed from the said other of the balanced mixers with an undelayed signal and via the said delay device with a delayed signal from the said other of the balanced mixers thereby to produce a second control signal which is fed back to control the balance of the said other balanced mixer from which an output signal from the transceiver is derived.

4,353,128

SYNCHRONOUS/ASYNCHRONOUS DATA COMMUNICATION ARRANGEMENT

Peter Cummiskey, Clark, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 19, 1980, Ser. No. 161,203
Int. Cl.³ H04J *3/02*
U.S. Cl. 370—44 **39 Claims**



1. A circuit arranged to multiplex an asynchronous binary data input signal with a synchronous binary data input signal such that the binary transition timing of said asynchronous binary data input signal is preserved at the output of said circuit

CHARACTERIZED IN THAT

said circuit comprises:

means for providing at said circuit output at timed intervals said synchronous data input signal as a binary data word having a fixed number of data bits,

means for detecting a binary transition in said asynchronous binary data input signal, and

means controlled by said detecting means for both adjusting a next one of said timed intervals and for inserting an extra data bit in a next one of said provided output data words.

32. A receiver unit for use in a communication system, said receiver arranged to receive an asynchronous multiplexed data word including one part consisting of a fixed number of bits of synchronous data and another part consisting of a fixed number of bits of asynchronous data

CHARACTERIZED IN THAT

said receiver unit comprises:

means for determining an increase in the number of bits in a received asynchronous multiplexed data word, and

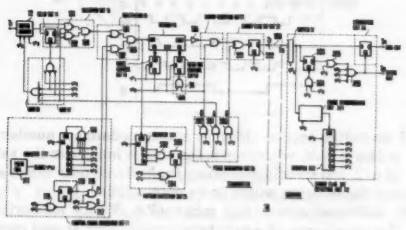
means controlled by said determining means for demultiplexing said received asynchronous multiplexed data into said synchronous data part and asynchronous data part such that said asynchronous data is provided at an output a fixed time period after the beginning of reception of said received multiplexed data word.

4,353,129

DIGITAL DATA TRANSMISSION SYSTEM

Mitsuo Nishiwaki, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Mar. 5, 1981, Ser. No. 240,940
Claims priority, application Japan, Mar. 10, 1980, 55-29971
Int. Cl.³ H04L *7/04*
U.S. Cl. 375—112 **6 Claims**



1. A digital data transmission system comprising a transmitter and a receiver, said transmitter comprising storage means for temporarily storing a data bit string forming a coded digital video signal, means for supplying a read request signal for reading out said data bit string from said storage means, means for forming one frame out of time slots alloted to a frame synchronization bit, a predetermined number of data bit of said data bit string and a dummy flag bit which indicates whether or not a dummy bit exists in said one frame, means for detecting whether or not a fixed bit pattern is formed in said one frame, means for providing said dummy bit to a predetermined one of said time slots in response to the result of said detection, means for inserting a dummy flag bit indicative of whether or not the dummy bit has been inserted to a time slot for said dummy flag bit, means for supplying a data bit which have dropped out by addition of said dummy bit to said frame forming means so that said dropped data bit is inserted as a part of said data bits forming a succeeding frame, and means for suspending the supply of said read request signal for the bit corresponding to said dropped data bit; said receiver comprising an input terminal for receiving in serial fashion the transmitted data bit string supplied from said transmitter, means for detecting said dummy flag bit in said transmitted data bit string, and means for separating said transmitted data bit string into a dummy bit and input data bits in response to the detection of said dummy flag bit.

4,353,130

DEVICE FOR PROCESSING SERIAL INFORMATION WHICH INCLUDES SYNCHRONIZATION WORDS

Marino G. Carasso, and Jakob G. Nijboer, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 29, 1980, Ser. No. 191,725
Claims priority, application Netherlands, Jun. 16, 1980, 8003477
Int. Cl.³ H04L *7/08*
U.S. Cl. 375—114 **3 Claims**

1. A device for the synchronized reading of a serial medium

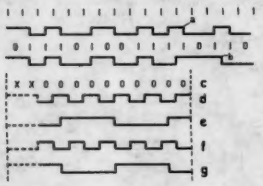
which present a series of synchronization words (S), wherein each pair of successive synchronization words is separated by a fixed number of n data words (D0 . . . D7), the synchronization words in undisturbed condition having mutually corresponding bit patterns which differ from the set of allowable data word bit patterns, said device comprising:

a. an input (**20**) for interfacing to said medium;

b. a serial buffer memory fed by said input and comprising:

b1. a first section (**22**) for accommodating a synchronization word:

b2. an odd number of m (m=1,3 . . .) serial modules, each module consisting of a second section (**24**) for accommodating said fixed number of n data words and a third section (**26**) for accommodating a further synchronization word;



b3. an output section (**28***a*) for accommodating a number of p data words, wherein p is the closest integer to the value of n/2, and serially presenting the buffered data words and synchronization words to its output (**38**);

b4. additional memorizing means (**28***b*, **30**) for memorizing the occurrence of a synchronization word at said output during an interval corresponding to the length of (n−p) data words plus one synchronization word;

c. majority means (**32**, **34**, **36**, **40**) connected to respective outputs of said first section, said odd number of third sections and said memorizing means for generating a majority signal upon detection of (k+1)/2 synchronization word signals;

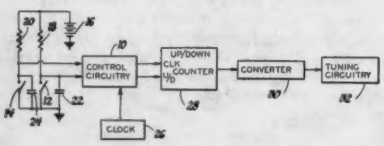
d. timing means (**152**) having a control input connected to said majority means for generating a series-to-parallel control signal for a conversion device (**156**) fed by said output.

4,353,131

TOUCH ACTUATED ELECTRONICALLY TUNED RECEIVER

Chang L. Yueh, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 9, 1979, Ser. No. 65,382
Int. Cl.³ H03J *7/28*
U.S. Cl. 455—179 **5 Claims**



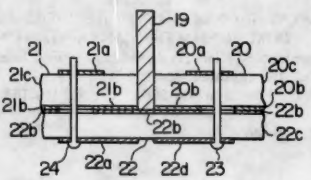
1. A receiver including means for effecting tuning of the receiver in response to a binary code, first and second manually actuable switch means, code generating means for supplying said binary code, said code generating means responsive to actuation of said first switch means for less than a predetermined time interval for incrementing said code to a value representing the next higher channel, said code generating means responsive to actuation of said second switch means for less than said predetermined time interval for decrementing said code to a value representing the next lower channel, said code generating means responsive to continuous actuation of said first switch means for at least said predetermined time interval for thereafter incrementing said code at a first rate for the duration of actuation of said first switch means and responsive to actuation of said second switch means subsequent to actuation of said first switch means for incrementing said code at a second higher rate for the duration of concurrent actuation of said first and second switch means.

4,353,132

DOUBLE SUPERHETERODYNE TUNER

Takeshi Saitoh; Toshio Nagashima, both of Yokohama; Hiroshi Hatashita, Tokyo, and Susumu Yamamoto, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 21, 1981, Ser. No. 226,826
Claims priority, application Japan, Jan. 28, 1980, 55-7827
Int. Cl.³ H04B *1/26*
U.S. Cl. 455—315 **3 Claims**

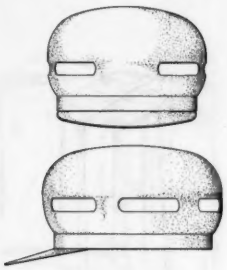


1. A double superheterodyne tuner including a first and a second frequency converter and a bandpass filter connecting said first and second frequency converters electrically each of which is built on a substrate constituted by microstrip lines comprising line conductors provided on one main surface of a flat dielectric plate and grounding conductors provided on the other surface of said flat dielectric plate, wherein the improvement comprises: means for juxtaposing a first and second microstrip line substrates in which said first and second frequency converters are respectively built, with said line conductors of said first and second substrates disposed on the same side, with said grounding conductors of said first and second substrates disposed on the same side and in a plane; a shielding plate provided between and perpendicularly to said first and second substrates; and means for arranging a third microstrip line substrate in which said bandpass filter is constructed, back to back with said first and second substrates, with the grounding conductor of said third substrate kept in contact with said grounding conductors of said first and second substrates and with said third substrate extending over said first and second substrates, whereby high-frequency isolation of each circuit element can be securely established.

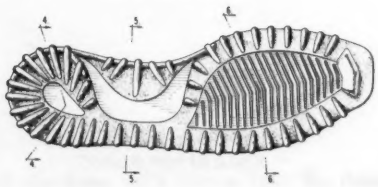
DESIGNS

OCTOBER 5, 1982

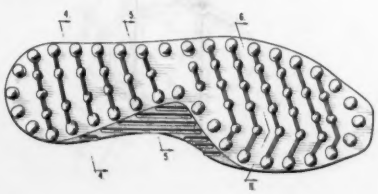
266,370
CAP
Ogden W. Boden, 1580 Gaywood Dr., Altadena, Calif. 91001
Filed Jul. 14, 1980, Ser. No. 168,002
Term of patent 14 years
Int. Cl. D02—*03*
U.S. Cl. D2—244



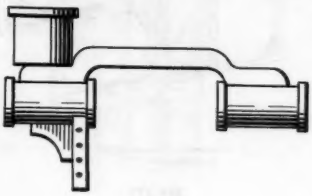
266,371
SHOE SOLE
Jerry D. Stubblefield, 11725 NW. Damascus, Portland, Oreg. 97229
Filed Nov. 3, 1980, Ser. No. 203,067
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—320



266,372
SHOE SOLE
Jerry D. Stubblefield, 11725 NW. Damascus, Portland, Oreg. 97229
Filed Nov. 3, 1980, Ser. No. 203,068
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—320



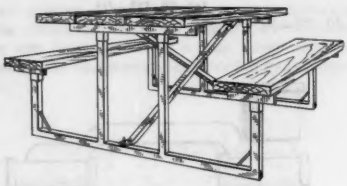
266,373
GOLF CLUB CARRIER
Roberto J. Baptista, Caracas, Venezuela, assignor to Roanto Investment N.V., Caracas, Venezuela
Filed Aug. 18, 1980, Ser. No. 178,761
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—37



266,374
KEY HOLDER
Cal V. Drake, P.O. Box 9217, Marina del Rey, Calif. 90291
Filed Apr. 14, 1980, Ser. No. 140,203
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—61

266,375
TOOTHBRUSH AND TOOTHPASTE TUBE CAP SET
Channing Cassett, New York, N.Y., assignor to Valdor International Cosmetics Ltd., New York, N.Y.
Filed Sep. 11, 1980, Ser. No. 186,251
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—18

266,376
PICNIC TABLE
Bryan H. Musgrove, 3615 S. Locust Grove, Meridian, Id. 83642
Filed Apr. 21, 1980, Ser. No. 142,063
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—45

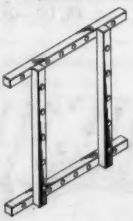


266,377
CHAIR
Mike T. Claman, New York, N.Y., assignor to Lewittes Furniture Enterprises, Inc., New York, N.Y.
Filed Apr. 28, 1980, Ser. No. 144,999
Term of patent 3½ years
Int. Cl. D6—*01*
U.S. Cl. D6—57

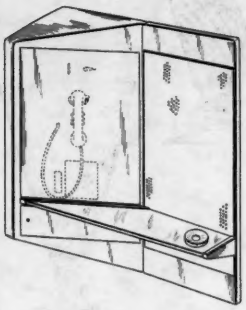
266,378
CHAIR
Giovanni Offredi, Milan, Italy, assignor to Fratelli Saporiti, Besnate, Italy
Filed Mar. 19, 1980, Ser. No. 131,648
Claims priority, application Italy, Sep. 19, 1979, 60933/79[U]
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—71

266,379
COMBINED TOILET BOWL BRUSH AND HOUSING THEREFOR
Tacko D. Alissandratos, P.O. Box 606, Tarpon Springs, Fla. 33589
Filed Nov. 6, 1979, Ser. No. 91,992
Term of patent 14 years
Int. Cl. D23—*02*; D4—*02*; D6—*04*
U.S. Cl. D6—86

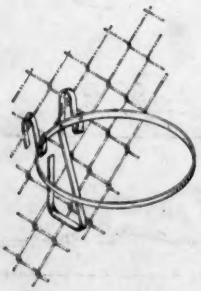
266,380
EASEL
Richard J. Ploeger, 318 Elm St., Santa Cruz, Calif. 95060
Filed Sep. 19, 1979, Ser. No. 76,918
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—114



266,381
PUBLIC TELEPHONE SHELF
Donald M. Genaro, Haworth, N.J.; John N. McGarvey, Drexel Hill, Pa., and Dale F. Milsark, Summit, N.J., assignors to Western Electric Company, Inc., New York, N.Y.
Filed Mar. 9, 1979, Ser. No. 19,197
Term of patent 14 years
Int. Cl. D25—*03;* D6—*04*
U.S. Cl. D6—133

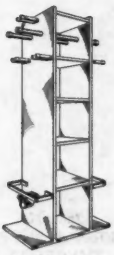


266,382
FLOWER POT HOLDER
Burton W. Hutchinson, 29770 Wistaria Valley Rd., Canyon Country, Calif. 91351
Filed Jun. 19, 1980, Ser. No. 161,096
Term of patent 14 years
Int. Cl. D6—*04;* D8—*08*
U.S. Cl. D6—137

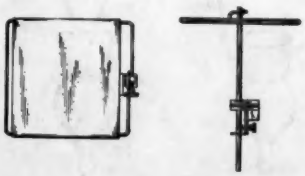


266,383
CHINA CABINET OR THE LIKE
Haywood L. West, High Point, N.C., assignor to Burlington Furniture Division of Burlington Industries, Inc., Greensboro, N.C.
Filed Mar. 20, 1980, Ser. No. 131,884
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—172

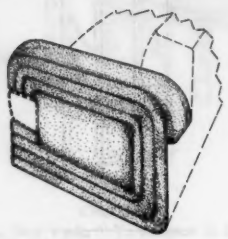
266,384
STORAGE RACK FOR SKI EQUIPMENT
Morris A. Lundin, 8721 Beard Rd., Minneapolis, Minn. 55431
Filed May 27, 1980, Ser. No. 153,542
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—186



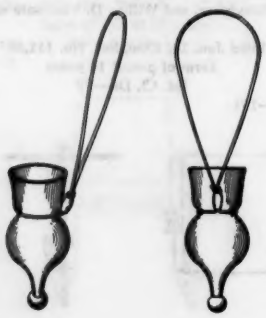
266,385
SUN SHADE ATTACHMENT FOR A CHAIR
Donovon E. Musgrove, and Wilbur D. Vos, both of Sully, Iowa 50251
Filed Jan. 14, 1980, Ser. No. 111,587
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—191



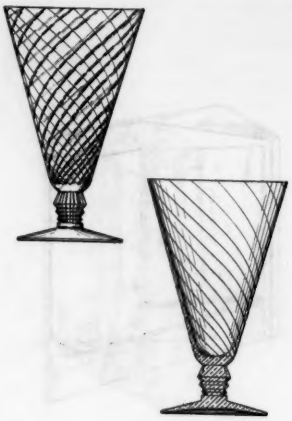
266,386
FURNITURE ARM
James L. DiPersia, New York, N.Y., assignor to Avento Designs, Inc., New York, N.Y.
Filed Dec. 14, 1979, Ser. No. 103,952
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—194



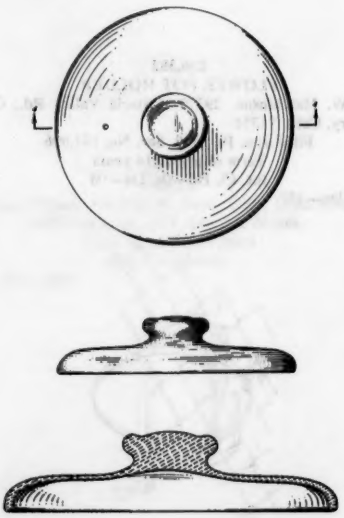
266,387
COMBINED TUMBLER AND SUPPORTING NECKLACE THEREFOR
Anthony D. Angarone, 108 Marilyn Ter., Addison, Ill. 60101
Filed Nov. 28, 1980, Ser. No. 211,255
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—6



266,388
GOBLET
Jon R. Saffell, Glen Dale, W. Va., assignor to Fostoria Glass Company, Moundsville, W. Va.
Filed Oct. 24, 1980, Ser. No. 200,230
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—13

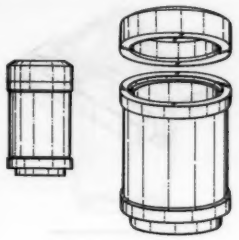


266,389
DISH COVER OR SIMILAR ARTICLE
George B. Jensen, deceased, late of Syracuse, N.Y., and by Stanley F. Campion, executor, Fayetteville, N.Y., assignors to Syracuse China Corporation, Syracuse, N.Y.
Filed Nov. 2, 1979, Ser. No. 90,547
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—40

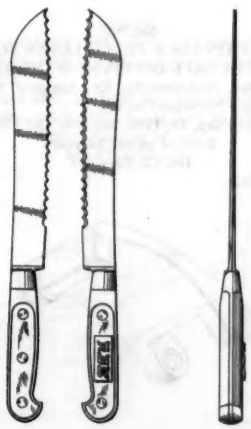


266,390
CONDIMENT DISPENSER OR THE LIKE
Richard V. Haner, Elmira, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Aug. 20, 1980, Ser. No. 179,893
Term of patent 14 years
Int. Cl. D07—*06*
U.S. Cl. D7—54

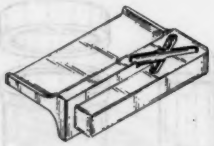
266,391
INSULATED CAN HOLDER
Vincent W. Jordon, 4805 Moscow Rd., Spring Arbor, Mich. 49283
Filed Sep. 18, 1980, Ser. No. 188,500
Term of patent 14 years
Int. Cl. D07—*01, 06*
U.S. Cl. D7—70



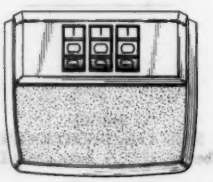
266,392
SABBATH BREAD KNIFE
Charles C. Hoffberger, 1715 N. Lake Shore Dr., Sarasota, Fla. 33581
Filed Jan. 14, 1980, Ser. No. 111,799
Term of patent 14 years
Int. Cl. D07—*03*
U.S. Cl. D7—142



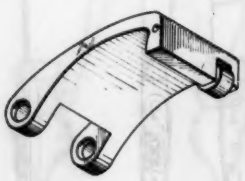
266,393
KNIFE SHARPENER
Paul C. Mayer, Wausau, Wis., and James R. Reichow, Minneapolis, Minn., assignors to Fiskars Manufacturing Company, Wausau, Wis.
Filed Jun. 11, 1980, Ser. No. 158,551
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—93



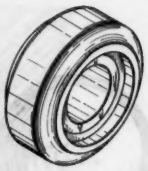
266,394
COMBINATION LOCK
Edward M. Stolarz, Yorktown Heights, N.Y., assignor to Presto Lock, Inc., Garfield, N.J.
Filed Aug. 25, 1980, Ser. No. 181,202
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—336



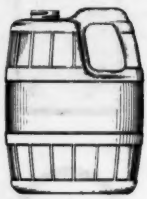
266,395
COMBINATION LOCK FENCE LEVER FOR BANK VAULTS, SAFE DOORS AND THE LIKE
Harry C. Miller, Nicholasville, Ky., assignor to Sargent & Greenleaf, Inc., Nicholasville, Ky.
Filed Sep. 15, 1980, Ser. No. 187,175
Term of patent 14 years
Int. Cl. D8—*343*
U.S. Cl. D8—343



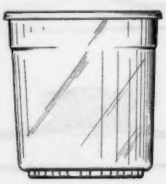
266,396
ROLLER
Donald Neville, Los Angeles County, Calif., assignor to Plastiglide Manufacturing Corporation, Hawthorne, Calif.
Filed Dec. 18, 1978, Ser. No. 970,376
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—375



266,397
BOTTLE
Raymond C. Coniglio, Burlington, Canada, assignor to Twinpak Ltd., Dorval, Canada
Filed Dec. 18, 1979, Ser. No. 104,962
Claims priority, application Canada, Jun. 18, 1979, 1806-79-17
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—325



266,398
PACKAGING CONTAINER OR SIMILAR ARTICLE
John H. Haag, Sr., Evansville, Ind., assignor to Ball Corporation, Muncie, Ind.
Filed Apr. 11, 1979, Ser. No. 29,367
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—370



266,399
CONTAINER FOR LIQUIDS
John A. Cox, Bethel Park, Pa., assignor to Mobay Chemical Corporation, Pittsburgh, Pa.
Filed Feb. 7, 1980, Ser. No. 119,600
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—378

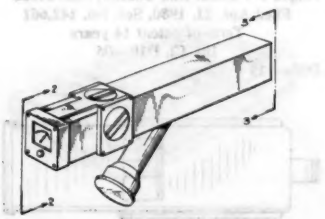
266,400
COMBINED FUNNEL AND STORAGE CONTAINER
Martin Shatz, 2247 W. Peralta Ave., Mesa, Ariz. 85202
Filed Oct. 1, 1980, Ser. No. 192,857
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—383

266,401
BOTTLE
Bernard T. Picot, Paris, France, assignor to Parfums Christian Dior S.A., Paris, France
Filed Jan. 28, 1980, Ser. No. 117,530
Claims priority, application France, Jul. 27, 1979, 42672
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—384

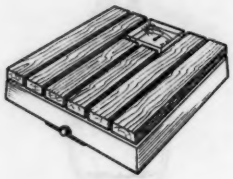
266,402
BOTTLE OR SIMILAR ARTICLE
George R. Conrad, Elk Grove, Ill., assignor to Fantasy Flavors, Inc., Wheaton, Ill.
Filed Sep. 4, 1980, Ser. No. 184,437
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—404

266,403
HEAT SHRINKABLE CAPSULE FOR A CHAMPAGNE BOTTLE
Edward H. Norman, Kenwood, Calif., assignor to Fleming-Potter Company, Inc., Peoria, Ill.
Filed Mar. 27, 1980, Ser. No. 134,539
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—438

266,404
RADIOACTIVITY SPECTROMETER
George R. Goldak, P.O. Box 54, Langham, Saskatchewan, Canada (S0K 2L0)
Filed Mar. 24, 1980, Ser. No. 132,952
Claims priority, application Canada, Feb. 26, 1980, 26-02-80-7
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—46

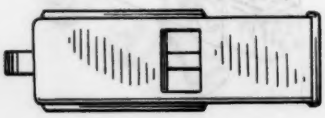


266,405
BATHROOM SCALE
André Garrigues, Monnetier-Mornex, France, assignor to Terraillon, Juvigny, France
Filed Jul. 18, 1980, Ser. No. 171,936
Claims priority, application Hague, Feb. 1, 1980, 69.926
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—92

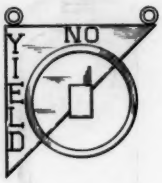


266,406
PORTABLE WARNING LIGHT
Robert J. De Fontes, 207 Bradley St., Seekonk, Mass. 02771
Filed Sep. 17, 1979, Ser. No. 75,976
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—114

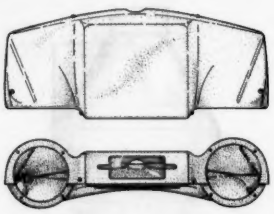
266,407
ILLUMINATED WHISTLE
Dietmar Nagel, 147 South Rd., Chester, N.J. 07930
Filed Apr. 21, 1980, Ser. No. 142,661
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—119



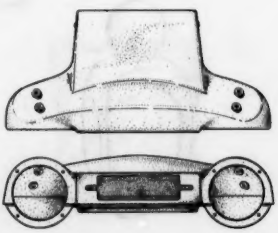
266,408
NON-SMOKER'S NECKLACE PENDANT OR SIMILAR ARTICLE
Dale A. Dotson, 1005 Mantooth, Lufkin, Tex. 75901
Filed Jun. 30, 1980, Ser. No. 163,921
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—81



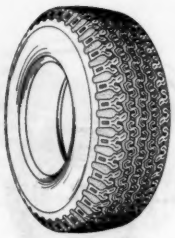
266,409
MOTORCYCLE RADIO HOUSING
Fred O. Hoese, 30706 Wildcat Dr., Bulverde, Tex. 78163
Filed Aug. 4, 1980, Ser. No. 175,274
Term of patent 14 years
Int. Cl. D12—*11*; D14—*03*
U.S. Cl. D12—114



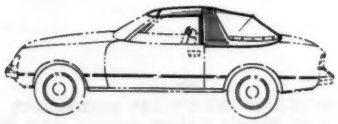
266,410
MOTORCYCLE RADIO HOUSING
Fred O. Hoese, 30706 Wildcat Dr., Bulverde, Tex. 78163
Filed Aug. 4, 1980, Ser. No. 175,275
Term of patent 14 years
Int. Cl. D12—*11*; D14—*03*
U.S. Cl. D12—114



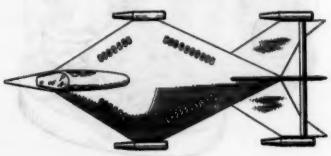
266,411
VEHICLE TIRE
Hideaki Nishio, Urawa, and Kazunari Takaki, Akikawa, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan
Filed Dec. 20, 1979, Ser. No. 105,700
Claims priority, application Japan, Aug. 16, 1979, 54-34117
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—147



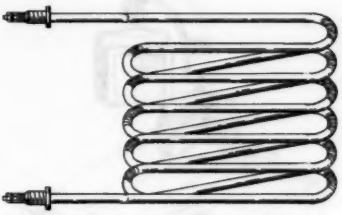
266,412
CONVERTIBLE TOP
Dann T. Deaver, 20565 Williamsburg Ct., Harper Woods, Mich. 48236
Filed Jun. 13, 1979, Ser. No. 48,250
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—156



266,413
AIRPLANE
Perry B. Johnson, 169 N. Main St., Paterson, N.J. 07522
Division of Ser. No. 929,854, Jul. 31, 1978, Pat. No. Des. 259,713. This application May 27, 1980, Ser. No. 153,067
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D12—326



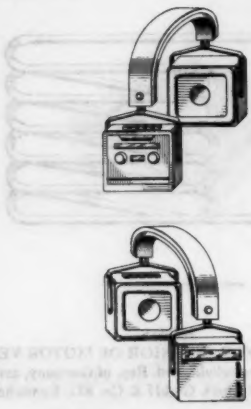
266,414
SHEATHED ELECTRIC HEATING ELEMENT
Richard W. Brent, Pittsburgh, Pa., assignor to Emerson Electric Co., St. Louis, Mo.
Filed Apr. 14, 1980, Ser. No. 140,140
Term of patent 14 years
Int. Cl. D13—*99;* D23—*03*
U.S. Cl. D13—21



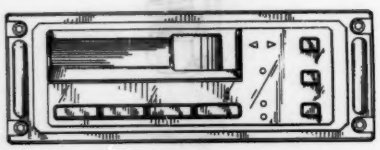
266,415
CONTROL UNIT FOR INTERIOR OF MOTOR VEHICLE
Heinz P. Cremer, Remscheid, Fed. Rep. of Germany, assignor to Keiper Automobiltechnik GmbH & Co. KG, Remscheid, Fed. Rep. of Germany
Filed Dec. 12, 1979, Ser. No. 102,948
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1979, MR747
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—32

266,416
REMOTE CONTROL FOR VIDEODISC PLAYER
Takayuki Hiraki, Yokohama, Japan, assignor to Universal Pioneer Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 11, 1980, Ser. No. 120,402
Term of patent 7 years
Int. Cl. D13—*03;* D14—*01*
U.S. Cl. D14—1

266,417
COMBINED CASSETTE PLAYER, HEADSET AND RADIO
Damaso Perez, 10325 NW. 35 Ct., Miami, Fla. 33147
Filed Sep. 11, 1980, Ser. No. 186,174
Term of patent 14 years
Int. Cl. D14—*01, 03*
U.S. Cl. D14—5

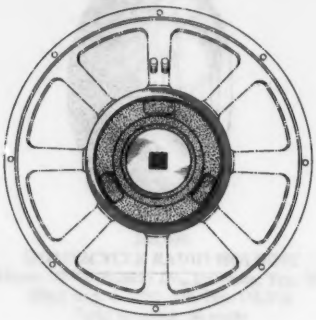


266,418
AUTOMOBILE CASSETTE DECK
Toshiyoshi Kikuhara, Naka, Japan, assignor to Clarion Co. Ltd., Tokyo, Japan
Filed Oct. 26, 1979, Ser. No. 88,627
Claims priority, application Japan, Apr. 26, 1979, 17298
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—7



266,419
MAGAZINE OF MAGNETIC TAPE
Hidehisa Hashimoto, Funabashi, and Keiichi Yoshizawa, Chiba, both of Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan
Filed Jun. 5, 1979, Ser. No. 45,834
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—11

266,420
LOUDSPEAKER MAGNET HOUSING
Douglas J. Warner, Berkeley, Calif., assignor to James B. Lansing Sound, Inc., Chicago, Ill.
Filed Oct. 9, 1979, Ser. No. 82,683
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—37



266,421
TELEPHONE
Wesley L. Thomas, 109 S. Catalina St., Los Angeles, Calif. 90004
Filed Jan. 15, 1980, Ser. No. 112,306
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53

266,422

CLOCK RADIO

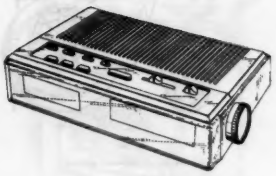
Pak-Hung Yip, Hong Kong, Hong Kong, assignor to Vita Electronics Corp., Ltd., Hong Kong, Hong Kong

Filed Sep. 7, 1979, Ser. No. 73,417

Term of patent 14 years

Int. Cl. D14—*03;* D10—*01*

U.S. Cl. D14—73



266,423

PROJECTION TELEVISION RECEIVER

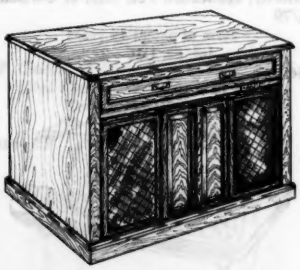
Melvin H. Boldt, Glenview; David P. Chuboff, North Barrington; Clement W. Trottier, Prospect Heights, and Robert E. Slater, Vernon Hills, all of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Feb. 2, 1981, Ser. No. 230,986

Term of patent 14 years

Int. Cl. D14—*03*

U.S. Cl. D14—83



266,424

ELECTRONIC PRINTER

Shunichi Nagaya, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha and Shinshu Seiki Kabushiki Kaisha, both of Nagano, Japan

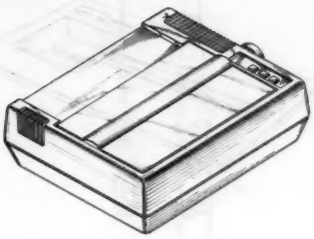
Filed Jul. 31, 1980, Ser. No. 174,062

Claims priority, application Japan, Feb. 1, 1980, 55-3137

Term of patent 14 years

Int. Cl. D14—*02;* D18—*02*

U.S. Cl. D14—111



266,425

COMPUTER CABINET WORK SURFACE

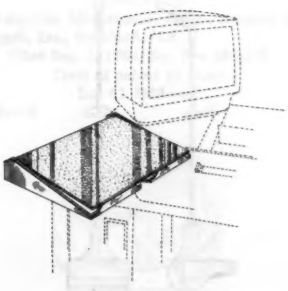
Richard W. Reaume, Farmington Hills, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 31, 1979, Ser. No. 108,836

Term of patent 14 years

Int. Cl. D14—*02*

U.S. Cl. D14—114



266,426

FRONT PANEL FOR FLOPPY DISC DRIVE

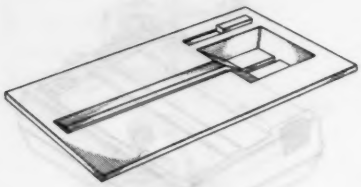
William F. Dresselhaus, Redwood City, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Jun. 20, 1980, Ser. No. 161,274

Term of patent 14 years

Int. Cl. D14—*02*

U.S. Cl. D14—115



266,427

PORTABLE ROTARY SNOW THROWER

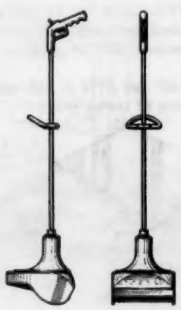
Robert L. McMickle; Gary B. Ader, and Steven L. Grice, all of Spirit Lake, Iowa, assignors to Berkley and Company, Inc., Spirit Lake, Iowa

Filed Jun. 25, 1979, Ser. No. 51,374

Term of patent 14 years

Int. Cl. D8—*05*

U.S. Cl. D15—12



266,428

SELF-PROPELLED FLAIL BLADE LAWN MOWER

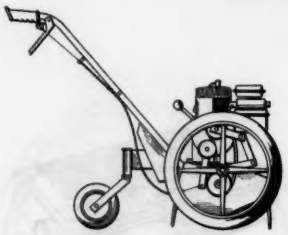
Douglas F. Green, 155 Fison Ave., Eagle Farm, Brisbane, Queensland, Australia (4007)

Filed Mar. 10, 1980, Ser. No. 129,095

Term of patent 14 years

Int. Cl. D15—*03*

U.S. Cl. D15—16



266,429

MICROFILM READER

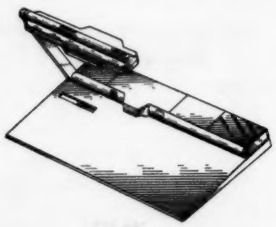
John W. Overman, Phoenix, Ariz., assignor to Bell & Howell Company, Chicago, Ill.

Filed Jun. 23, 1980, Ser. No. 162,469

Term of patent 14 years

Int. Cl. D16—*03*

U.S. Cl. D16—11



266,430

REAR SCREEN MOTION PICTURE PROJECTOR WITH FILM SPOOL STORAGE UNIT

Norbert Schlagheck, Fürstenfeldbruck, Fed. Rep. of Germany, assignor to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

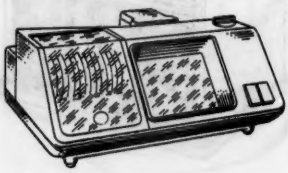
Filed Feb. 7, 1980, Ser. No. 120,078

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1979, G166/79

Term of patent 14 years

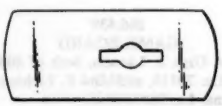
Int. Cl. D16—*02*

U.S. Cl. D16—14



266,431
COPYING MACHINE
Robert A. Clowe, Penfield; Donald A. Robertson, Fairport, and Gregory P. Wright, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Aug. 4, 1980, Ser. No. 174,779
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—30

266,432
LENS MASK
Alphonse P. Cinque, 65 Earle Ave., Lynbrook, N.Y. 11563
Filed Jun. 13, 1980, Ser. No. 159,373
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D16—38

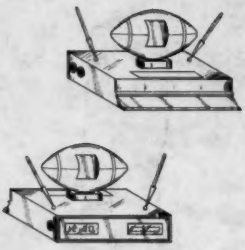


266,433
LENS MASK
Alphonse P. Cinque, 65 Earle Ave., Lynbrook, N.Y. 11563
Filed Jun. 13, 1980, Ser. No. 159,374
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D16—38

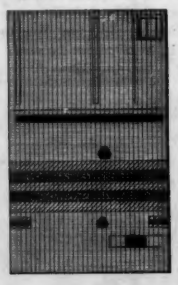
266,434
CLAY MOLDING TOOL
Chester W. Kowalski, 639 Parsons St., Des Plaines, Ill. 60016
Filed Oct. 3, 1980, Ser. No. 193,632
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D19—35

266,435
DESK TRAY
Clayton A. Laughlin, Minneapolis, Minn., assignor to Ketchum & McDougall, Inc., Roseland, N.J.
Filed Sep. 4, 1980, Ser. No. 184,435
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—75

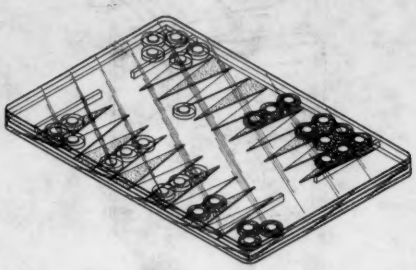
266,436
DESK ORNAMENT
Albert E. Smith, 906 Monticello St., Greensboro, N.C. 27410
Filed Feb. 21, 1979, Ser. No. 13,060
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—77



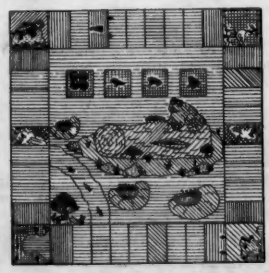
266,437
LABEL FOR A CASSETTE HOLDER
Keiichi Yoshizawa, Tokyo, Japan, assignor to TDK Electronics Co., Ltd., Tokyo, Japan
Filed Aug. 6, 1979, Ser. No. 63,695
Claims priority, application Japan, Feb. 7, 1979, 54-4208
The portion of the term of this patent subsequent to Oct. 5, 1996, has been disclaimed.
Term of patent 14 years
Int. Cl. D19—*08*
U.S. Cl. D20—27



266,438
SELF-CONTAINED MAGNETIC BACKGAMMON BOARD AND GAME PIECES
Ron Reisman, 413½ S. Willaman Dr., Los Angeles, Calif. 90048
Filed Dec. 26, 1979, Ser. No. 106,690
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—16



266,439
GAME BOARD
Arden K. Stewart; Olga J. Lawson, both of 4032 Prytania St., New Orleans, La. 70115, and Ann F. Lichtenstein, 786 Glen Cove La., Gretna, La. 70053
Filed Apr. 25, 1980, Ser. No. 143,664
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—25



266,440

TOY SPACE VEHICLE

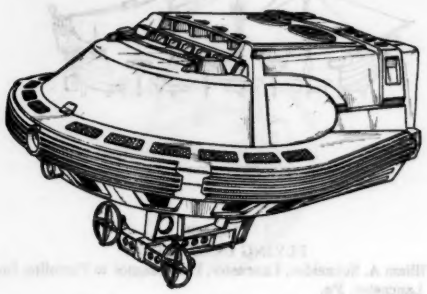
Jose M. A. Pibet, Barcelona, Spain, assignor to Exin-Iber, S.A., Barcelona, Spain

Filed Jul. 15, 1980, Ser. No. 169,210

Term of patent 14 years

Int. Cl. D21—*01*

U.S. Cl. D21—87



266,441

TOY SEAPLANE

Mel Appel, Nine Nottingham Rd., Livingston, N.J. 07039, and George Kress, Scotch Plains, N.J., assignors to Mel Appel, Livingston, N.J.

Filed Feb. 17, 1981, Ser. No. 234,621

Term of patent 14 years

Int. Cl. D21—*01*

U.S. Cl. D21—90

266,442

TOY TYPEWRITER

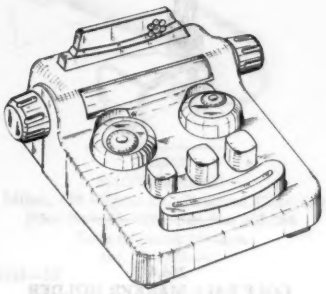
Mel Appel, Nine Nottingham Rd., Livingston, N.J. 07039; Paul B. Means, III, Basking Ridge, N.J.; James J. Wilcox, Summit, N.J., and David W. Reina, Huntington, N.Y., assignors to Mel Appel, Livingston, N.J.

Filed Apr. 11, 1979, Ser. No. 29,118

Term of patent 14 years

Int. Cl. D21—*01*

U.S. Cl. D21—109



266,443

EXERCISE TREADMILL AND THE LIKE

Raymond L. Summerlot, Terre Haute, Ind., assignor to Nissen Corporation, Cedar Rapids, Iowa

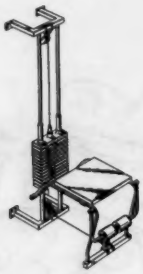
Filed Oct. 20, 1980, Ser. No. 198,641

Term of patent 14 years

Int. Cl. D21—*02*

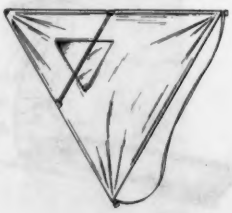
U.S. Cl. D21—192

266,444
PHYSICAL EXERCISER
Roger P. Fry, Llantwit Major, Great Britain, assignor to Gympac Systems Limited, Barry, Great Britain
Filed Jul. 24, 1980, Ser. No. 171,995
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—195

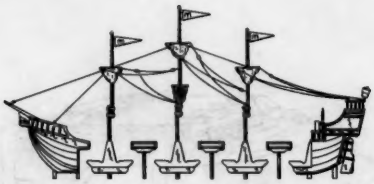


266,445
GOLF BALL MARKER HOLDER
Mitsuru Yokotaki, 10-10, Nishifuna 4-chome, Funabashi-shi, Chiba-ken, Japan
Filed Feb. 19, 1980, Ser. No. 122,822
Term of patent 7 years
Int. Cl. D21—*02*
U.S. Cl. D21—221

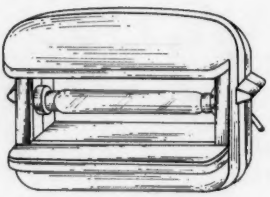
266,446
SKATE SAIL
Stephen M. Verdon, 1211 SW. 128th Ave., Miami, Fla. 33184
Filed Sep. 4, 1979, Ser. No. 72,062
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—224



266,447
PLAYGROUND SEATING UNIT
Donald S. Ament, Encino, and Duane S. Ament, Hollywood, both of Calif., assignors to Miracle Recreation Equipment Company, Grinnell, Iowa
Filed Sep. 20, 1979, Ser. No. 77,363
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—242

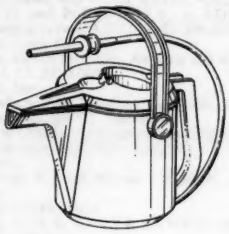


266,448
FLYING INSECT TRAP
William A. Schneider, Lancaster, Pa., assignor to Pestolite, Inc., Lancaster, Pa.
Filed Mar. 19, 1980, Ser. No. 131,809
Term of patent 14 years
Int. Cl. D22—*06*
U.S. Cl. D22—19



266,449
SPRINKLER
Martin Foreman, Merbein, Australia, assignor to Namerof Pty. Ltd., Merbein, Australia
Filed Oct. 10, 1979, Ser. No. 83,392
Claims priority, application Australia, Sep. 5, 1979, 78909
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—7

266,450
WATERING CAN OR THE LIKE
James B. Swett, Altamonte Springs, Fla.; Joseph W. Blake, III, New Canaan, Conn., and Rino Conti, Stoughton, Mass., assignors to Dart Industries Inc., Northbrook, Ill.
Filed Aug. 27, 1980, Ser. No. 181,606
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—11



266,451
FOUNTAIN HEAD
Richard L. Berry, Jr., 178 Roycroft Ave., Long Beach, Calif.
Filed Aug. 27, 1979, Ser. No. 69,900
Term of patent 14 years
Int. Cl. D23—*99*
U.S. Cl. D23—13

266,452
TUB SPOUT
Gary A. Fleischmann, Sheboygan, Wis., and Lawrence C. Peabody, Rindge, N.H., assignors to Kohler Co., Kohler, Wis.
Filed Apr. 10, 1980, Ser. No. 138,830
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—32

266,453
SHOWERHEAD
Scott W. Miller, 420 Pilgrim La., Stratford, Conn. 06497
Filed Nov. 23, 1981, Ser. No. 323,864
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—35

266,454
SHOWERHEAD
Scott W. Miller, 420 Pilgrim La., Stratford, Conn. 06497
Filed Nov. 23, 1981, Ser. No. 323,866
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—35

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 5TH DAY OF OCTOBER, 1982

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Nattermann & Cie GmbH: *See—*
Renson, Marcel; Etschenberg, Eugen; and Winkelmann, Johannes, 4,352,799, Cl. 424-244.000.

A. P. Green Refractories Co.: *See—*
Crookston, James A.; and Hill, James L., 4,352,661, Cl. 432-14.000.

A. W. Faber-Castell: *See—*
Leuthold, Werner; Krumnikl, Svatopluk; and Babel, Gunther, 4,352,581, Cl. 401-85.000.

AB Westin & Backlund: *See—*
Thalstrom, Peeter; and Westin, Karl G., 4,352,309, Cl. 83-697.000.

Abbe, Robert C.; and Poduje, Noel S., to ADE Corporation. Self inverting gauging system. 4,353,029, Cl. 324-236.000.

Abbondandolo, Luigi: *See—*
De Filippis, Pietro; Salvatore, Amedeo; and Abbondandolo, Luigi, 4,352,963, Cl. 200-5.00A.

Abe, Tadafumi: *See—*
Urai, Muneharu; Abe, Tadafumi; Haraguchi, Youichiro; and Hayashi, Koji, 4,352,709, Cl. 156-380.600.

Abeler, Gerd, to Ciba-Geigy Corporation. Chlorinated thermoplastics stabilized with aminothiouracils. 4,352,903, Cl. 524-100.000.

Abex Corp.: *See—*
Larson, Hugo R.; and Biswas, Chandi P., 4,352,416, Cl. 188-251.00M.

ACF Chemiefarma NV: *See—*
van Zorge, Jacob A., 4,352,804, Cl. 424-250.000.

Achelpohl, Fritz: *See—*
Feldkamper, Richard; and Achelpohl, Fritz, 4,352,468, Cl. 242-58.400.

Adams, Ronald D.; and Chia, E. Henry, to Southwire Company. Method of hot-forming metals prone to crack during rolling. 4,352,697, Cl. 148-2.000.

ADE Corporation: *See—*
Abbe, Robert C.; and Poduje, Noel S., 4,353,029, Cl. 324-236.000.

Adelman, Robert L.; and Segars, Roy, Jr., to Du Pont de Nemours, E. I., and Company. Hydrolysis of methyl acetate. 4,352,940, Cl. 562-607.000.

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Pyee, Maurice, 4,353,070, Cl. 343-701.000.

AGFA-Gevaert Aktiengesellschaft: *See—*
Hammer, Thomas; Hehn, Wilfried; Kocourek, Franz; Sieber, Werner; and Osegowitsch, Viktor, 4,352,448, Cl. 226-108.000.

Aiello, Elmer J.: *See—*
Pascucci, Vito S.; and Aiello, Elmer J., 4,352,428, Cl. 206-314.000.

Aisan Industry Co., Ltd.: *See—*
Yamada, Nobuo; and Morino, Toshiharu, 4,352,763, Cl. 261-72.00R.

Aisin Seiki Kabushiki Kaisha: *See—*
Nakamura, Shunichi, 4,352,257, Cl. 49-406.000.
Yamazawa, Masayuki, 4,352,333, Cl. 112-291.000.

Aisin Warner Kabushiki Kaisha: *See—*
Taniguchi, Takuji, 4,352,737, Cl. 210-455.000.

Akitomo, Nobuo: *See—*
Tohyama, Shigeo; Akitomo, Nobuo; and Nemoto, Isao, 4,352,561, Cl. 356-332.000.

Akiyama, Tatsuo: *See—*
Sugano, Takuo; Niki, Eiji; Okabe, Yoichi; and Akiyama, Tatsuo, 4,352,726, Cl. 204-195.00M.

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Ingestrand, Tore, 4,352,315, Cl. 89-36.00L.

Albers, Richard A., to Deft, Inc. Water-reducible epoxy coating compositions without emulsifier. 4,352,898, Cl. 523-414.000.

Albert Einstein College of Medicine of Yeshiva University: *See—*
Reid, Lola C. M.; and Rojkind, Marcos, 4,352,887, Cl. 435-240.000.

Alco Standard Corporation: *See—*
Wulf, Karl A., 4,352,969, Cl. 219-10.750.

Alexander, Alena, administrator: *See—*
Nessel, Jiri M., deceased; and Alexander, Alena, administrator, 4,352,560, Cl. 356-247.000.

Allen Industries, Inc.: *See—*
Miller, Donald E., 4,352,522, Cl. 296-214.000.

Allen Organ Company: *See—*
Whitefield, John T.; and Woron, Robert P., 4,352,312, Cl. 84-1.210.

Allen, Richard C.: *See—*
Strupczewski, Joseph T.; and Allen, Richard C., 4,352,811, Cl. 424-267.000.

Alliance Manufacturing Company, Inc., The: *See—*
Spalding, Wilbur J., 4,352,585, Cl. 403-24.000.

Allison, Kenneth C.; and Cooley, William H., to Almedco, Inc. Blind riveting and sealing system. 4,352,589, Cl. 403-408.000.

Allyn, Christopher L.; Gossard, Arthur C.; and Wiegmann, William, to Bell Telephone Laboratories, Incorporated. Graded bandgap rectifying semiconductor devices. 4,353,081, Cl. 357-16.000.

Almedco, Inc.: *See—*
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Alps Electric Company, Ltd.: *See—*
Shirakawa, Takashi, 4,353,106, Cl. 361-293.000.

Alps Patent Department: *See—*
Hori, Fumihisa; Tamukai, Tadao; and Miyajima, Mikio, 4,352,576, Cl. 400-154.400.

Altus Corporation: *See—*
Catanzarite, Vincent O., 4,352,867, Cl. 429-101.000.

ALZA Corporation: *See—*
Zaffaroni, Alejandro; and Fara, John, 4,352,791, Cl. 424-153.000.

Amada, Takayoshi: *See—*
Watanabe, Masaru; Amada, Takayoshi; and Yamaguchi, Shinichi, 4,352,462, Cl. 239-266.000.

Amberkar, Suresh D., to Dennison Manufacturing Company. Filter bag. 4,352,684, Cl. 55-382.000.

American Can Company: *See—*
Maxwell, Dorothy; and Fell, David A., 4,352,901, Cl. 524-38.000.
Meyers, George L.; and Gorshe, Thomas M., 4,352,422, Cl. 198-404.000.

American Cyanamid Company: *See—*
DeMaria, Francesco, 4,352,852, Cl. 428-290.000.
Quinlan, James M., 4,352,891, Cl. 521-32.000.

American Home Products Corporation: *See—*
Kim, Dong H.; and McCaully, Ronald J., 4,352,753, Cl. 260-326.12R.

American Stabilis, Inc.: *See—*
Michaud, Roger P.; and Campbell, Douglas B., deceased, 4,352,656, Cl. 431-72.000.

American Sterilizer Company: *See—*
Makhijani, Raju T., 4,352,439, Cl. 220-316.000.

AMP Incorporated: *See—*
Gutter, David H., 4,352,531, Cl. 339-14.00R.

Analytical Radiation Corporation: *See—*
Wieder, Irwin; and Wollenberg, Robert H., 4,352,751, Cl. 260-112.00R.

Anders, Walter G., to Diebold Incorporated. Pneumatic tube system teller terminal construction. 4,352,603, Cl. 406-27.000.

Anderson, Arthur I.; and Harvatin, Louis J., to North American Car Corporation. Railway hopper car. 4,352,331, Cl. 105-248.000.

Anderson, David J.; and Loughman, Barbara E., to Upjohn Company, The. 1,3-Thiazin-4-one. 4,352,929, Cl. 544-54.000.

Anderson, David N.: *See—*
Billett, Ronald J.; Anderson, David N.; and Easter, William M., 4,352,830, Cl. 426-421.000.

Anderson, Jared A.; Van Gelder, Robert V.; Yazolino, Lauren F.; and Braun, Jimmy E., to Signetics Corporation. Circuit board mounting and cooling assembly. 4,352,274, Cl. 62-229.000.

Anderson, Terrance M.: *See—*
Landrum, Michael T.; and Anderson, Terrance M., 4,352,644, Cl. 417-402.000.

Ando, Yoichi, to Mitsubishi Pencil Co., Ltd. Knock-out type mechanical pencil with retractable eraser. 4,352,580, Cl. 401-29.000.

Andou, Hiroyuki: *See—*
Tatematsu, Kenzou; Sugihara, Yasuhiro; Andou, Hiroyuki; Seki, Tatsuo; Dezaki, Yoshito; and Nishino, Yasukazu, 4,353,095, Cl. 358-260.000.

Andrews, H. David, Jr., to Star Packaging Corporation. Method of packaging fowl within stretch bags. 4,352,263, Cl. 53-436.000.

Andrews, Merritt B., to United Technologies Corporation. Wind turbine blade pitch control system. 4,352,634, Cl. 416-154.000.

Anelva Corporation: *See—*
Tsukada, Tsutomu, 4,352,725, Cl. 204-192.00E.

Angelchik, Jean P. Apparatus for effecting anastomotic procedures. 4,352,358, Cl. 128-334.00R.

Ano-Coil Limited: *See—*
Park, Timothy A.; and Turner, Brian C., 4,352,721, Cl. 204-35.00N.

Antek Instruments, Inc.: *See—*
Parks, Robert E., 4,352,779, Cl. 422-52.000.

Anthonsen, Reiner: *See—*
von Meer, Walter; Jensen, Uwe; and Anthonsen, Reiner, 4,352,861, Cl. 428-511.000.

Antoni, Herbert: *See—*
Blattry, Hans; and Antoni, Herbert, 4,352,500, Cl. 279-121.000.

Aoki, Harumi: *See—*
Uno, Naoyuki; Jyojiki, Masao; and Aoki, Harumi, 4,352,545, Cl. 354-25.000.

Aoyama, Shunichi; and Miisho, Kazuyuki, to Nissan Motor Co., Ltd. Valve operating mechanism for internal combustion engines. 4,352,344, Cl. 123-90.180.

Applied Plastics Co., Inc.: *See*—
Firth, Francis G., 4,352,570, Cl. 366-127.000.

Arai, Yasuyuki: *See*—
Tsukagoshi, Tsunehiro; Yokozeki, Shinichi; Yoshino, Toshikazu; and Arai, Yasuyuki, 4,352,407, Cl. 181-167.000.

Arbed S.A.: *See*—
Metz, Paul; Schockmel, Robert; and Mersch, Roland, 4,352,764, Cl. 264-8.000.

Ardac, Inc.: *See*—
Gorgone, Robert L.; Kovach, Alan J.; and Novak, Frank A., 4,352,559, Cl. 356-71.000.

Arichi, Shigeru; and Uchida, Yoshihiro, to Osaka Chemical Laboratory Co., Ltd. Pharmaceutically active plant extract and composition thereof. 4,352,796, Cl. 424-195.000.

Arino Maestrojuan, Pablo: *See*—
Guzman Llansa, Eduardo; Arino Maestrojuan, Pablo; and Melendez Andreu, Enrique, 4,352,935, Cl. 549-72.000.

Arnaud, Georges; and Chiarelli, Gerard, to Commissariat à l'Energie Atomique. Device for holding and supplying with liquid metal an assembly for a nuclear reactor core. 4,352,778, Cl. 376-365.000.

Arnaudis, Germaine: *See*—
Combes, Claude; Arnaudis, Jean; Arnaudis, Germaine; and Marcou, Lucien, 4,352,812, Cl. 424-273.00R.

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Combes, Claude; Arnaudis, Jean; Arnaudis, Germaine; and Marcou, Lucien, 4,352,812, Cl. 424-273.00R.

Arnold, Arthur K.: *See*—
Curchod, Donald B.; and Arnold, Arthur K., 4,352,291, Cl. 73-462.000.

Arnold, Dan M.: *See*—
Paap, Hans J.; Meador, Richard A.; and Arnold, Dan M., 4,352,288, Cl. 73-61.00R.

Aro, Ernesto M., to Orion Industries, Inc. Latching glare shield. 4,352,519, Cl. 296-97.00G.

Artiano, Adrian, to Black Clawson Inc. Apparatus for sorting contaminant material from processing material. 4,352,431, Cl. 209-600.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
Matsuoka, Yukinori; Muto, Yoshihiko; and Kohno, Mitsuo, 4,352,926, Cl. 528-335.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Uno, Naoyuki; Jyojiki, Masao; and Aoki, Harumi, 4,352,545, Cl. 354-25.000.

Asko-Uop Oy: *See*—
Salmela, Erkki; and Kulo, Vaino, 4,352,659, Cl. 432-10.000.

Atwood Vacuum Machine Company: *See*—
Chambers, James W., 4,352,505, Cl. 280-495.000.

Aubert, Jean. Gate system for a hydraulic dam. 4,352,592, Cl. 405-102.000.

Aucoin, Ano J., Jr. Water powered electric generator. 4,352,990, Cl. 290-54.000.

Auerbach, Andrew B.: *See*—
Turbak, Albin F.; El-Kafrawy, Adel; Snyder, Fred W., Jr.; and Auerbach, Andrew B., 4,352,770, Cl. 264-187.000.

Aurora Industries, Inc.: *See*—
Smillie, John G., 4,352,856, Cl. 428-329.000.

Autoipari Kutato Intezet: *See*—
Cser, Gyula; and Pataki, Arpad, 4,352,342, Cl. 123-41.540.

Automotive Products Limited: *See*—
Maycock, Ian C., 4,352,420, Cl. 192-106.200.

Awerbuch, Tamara E., to Massachusetts Institute of Technology. Diffusion bioassay for the quantitative determination of mutagenicity. 4,352,880, Cl. 435-6.000.

Azegami, Hitoshi: *See*—
Yoda, Kuniichi; Ohkawa, Takehisa; and Azegami, Hitoshi, 4,352,859, Cl. 428-425.900.

Aziende Chimiche Riunite Angelini Francesco A.C.R.A.F. S.p.A.: *See*—
Silvestrini, Bruno; and Baiocchi, Leandro, 4,352,813, Cl. 424-273.00N.

Babcock & Wilcox Company, The: *See*—
Larson, Gordon C., 4,352,379, Cl. 138-97.000.

Babel, Gunther: *See*—
Leuthold, Werner; Krumnikl, Svatopluk; and Babel, Gunther, 4,352,581, Cl. 401-85.000.

Bailey, Charles H., to UOP Inc. Apparatus for mounting a plurality of catalytic elements for treating large volumes of exhaust gases. 4,352,783, Cl. 422-179.000.

Bailey, Peter K.; and Guildford, Leslie H., to U.S. Philips Corporation. Real time histogram modification system. 4,353,092, Cl. 358-160.000.

Bailey, Robert J., to Ford Motor Company. Method of forming spark plug bodies. 4,352,283, Cl. 72-354.000.

Baiocchi, Leandro: *See*—
Silvestrini, Bruno; and Baiocchi, Leandro, 4,352,813, Cl. 424-273.00N.

Baker, Douglas W., to Leisure Lawn, Inc. Motorized combination wet and dry lawn treatment spreader. 4,352,463, Cl. 239-663.000.

Baker, Richard H.; and Semanchik, Bruce D., to Reliance Electric Company. Common mode rejection coupler. 4,352,998, Cl. 307-311.000.

Ballato, Arthur; and Iafrate, Gerald J., to United States of America, Army. Contactless resistivity measurement method and apparatus. 4,353,027, Cl. 324-56.000.

Bang and Olufsen A/S: *See*—
Tyrsted, Ivan, 4,352,472, Cl. 242-186.000.

Baptist Medical Center of Oklahoma, Inc.: *See*—
Dormer, Kenneth J.; and Richard, Gordon L., 4,352,960, Cl. 179-107.0BC.

Barber, Jasper D., to Charlotte Pipe and Foundry Company. Apparatus for molding plastic pipe fitting with internal groove therein. 4,352,652, Cl. 425-525.000.

Barbier, Jean P.: *See*—
Rialland, Jean P.; and Barbier, Jean P., 4,352,828, Cl. 426-271.000.

Barda, Henry J.; and Gray, Sandra L., to Ferro Corporation. Process for the bromination of polystyrenes. 4,352,909, Cl. 525-157.000.

Barnes, Arthur G.: *See*—
Morrison, Jeffrey; Dixon, Stanley R. E.; and Barnes, Arthur G., 4,352,664, Cl. 434-14.000.

Barnes, David I.: *See*—
Robinson, Joseph G.; Carswell, Angela M.; and Barnes, David I., 4,352,922, Cl. 528-232.000.

Basey, Gene, to Zenith Stairways & Bldg. Products, Inc. Variable rack stair rail assembly. 4,352,485, Cl. 256-65.000.

BASF Aktiengesellschaft: *See*—
Lotsch, Wolfgang; Kemper, Reinhard; and Schefczik, Ernst, 4,352,932, Cl. 544-295.000.

BASF Wyandotte Corporation: *See*—
Davis, Pauls; and Wilson, Joe C., 4,352,742, Cl. 252-75.000.

Baston, Virgil F., to Energy Incorporated. Fluidized bed incineration of waste. 4,352,332, Cl. 110-346.000.

Batoni, Giovanni, to Piaggio & C. S.p.A. Constructional improvements in a two-stroke opposed piston engine operating with stratified charge. 4,352,343, Cl. 123-51.0BA.

Baumges, Hans; and Preuhs, Hans-Jurgen, to W. Schlafhorst & Co. Device for making a thread reserve. 4,352,466, Cl. 242-18.0PW.

Baxter Travenol Laboratories, Inc.: *See*—
Norton, William W., 4,352,669, Cl. 493-213.000.

Bay, David L.: *See*—
Knoll, William C.; and Bay, David L., 4,353,010, Cl. 315-220.000.

Bayer Aktiengesellschaft: *See*—
Kopp, Richard; Meyborg, Holger; and Schwindt, Jurgen, 4,352,896, Cl. 521-118.000.
Lohr, Karl-Dieter; Ullrich, Martin; and Tresper, Erhard, 4,352,568, Cl. 366-84.000.

BCIRA: *See*—
Godding, Ronald G.; and McCormack, William, 4,352,605, Cl. 406-29.000.

Beck, Vernon D., to International Business Machines. Apparatus and method for providing electron beam patterns using expanded beam array. 4,353,061, Cl. 340-720.000.

Beecham Group Limited: *See*—
Blaney, Frank E., 4,352,802, Cl. 424-246.000.

Beevers, Shannon D.; and Croxen, Robert E., to Croxen, Robert E. Detachable tow bar assembly. 4,352,668, Cl. 114-344.000.

Bell Telephone Laboratories, Incorporated: *See*—
Allyn, Christopher L.; Gossard, Arthur C.; and Wiegmann, William, 4,353,081, Cl. 357-16.000.
Bjorklund, Gary C.; Bloom, David M.; and Liao, Paul F., 4,352,566, Cl. 356-364.000.
Cummiskey, Peter, 4,353,128, Cl. 370-44.000.
Davis, Paul C.; Jackson, Raymond G.; Nahas, Joseph J.; Nelson, Dale H.; Ong, DeWitt G.; and Wittman, Brian A., 4,352,958, Cl. 179-84.0VF.
Guelden, Ronald H., 4,352,537, Cl. 339-99.00R.
Hall, Peter M.; Howland, Frank L.; Morabito, Joseph M.; and Rickabaugh, Lawrence J., 4,352,449, Cl. 228-123.000.
Holbrook, Walter R.; and Sponsler, William A., 4,352,835, Cl. 427-38.000.
Howard, Richard E.; Hu, Evelyn L.; and Jackel, Lawrence D., 4,352,870, Cl. 430-271.000.
Jaccodine, Ralph J.; and Michejda, John A., 4,353,086, Cl. 357-51.000.

Bellia, Ferdinando. Exercise table. 4,352,491, Cl. 272-144.000.

Belz, Roland. Toilet seat cover. 4,352,214, Cl. 4-243.000.

Benatti, Edmo, to Sandvik-Kosta GmbH. Tool fastening device. 4,352,612, Cl. 409-233.000.

Bendix Corporation, The: *See*—
Riggs, Robert R.; and Hunt, Paulmer D., 4,352,299, Cl. 74-84.00R.

Benschop, Hendrik P.; Kepner, Larry A.; and de Jong, Leonardus P. A., to Nederlandse Centrale Organisatie Voor Toegepast-Natuurwetenschappelijkonderzoek. 1-Substituted hydroxyiminomethylpyridinium salts, with an activity against organophosphate poisonings. 4,352,810, Cl. 424-263.000.

Berger, Harvey L.; and Brandow, Charles R., to Sono-Tek Corporation. Ultrasonic liquid atomizer having an axially-extending liquid feed passage. 4,352,459, Cl. 239-102.000.

Bergmann, Eduard, to Siemens Aktiengesellschaft. Method for coded data transmission in half-duplex operation between data terminal equipment of two data stations. 4,353,126, Cl. 370-24.000.

Bergmann, Gyorgy; Horvath, Mihaly; Palfalvi, Gyorgy; Tomcsanyi, Gabor; Kovacs, Gyula; and Laszlo, Kardy, to TRANSELEKTRO Magyar Villamossagi Kulkereskedelmi Vallalat. Ribbed construction assembled from sheet metal bands for improved heat transfer. 4,352,378, Cl. 138-38.000.

Bergwerksverband GmbH: *See*—
Flockenhaus, Claus; Joseph, Horst; and Meckel, Joachim, 4,352,618, Cl. 414-148.000.

Bernatt, Joseph, to S&C Electric Company. Combined pressure relief and indicator mechanism. 4,352,437, Cl. 220-89.00A.

Bernet, Jean-Marie; and Lejeune, Gabriel, to Thomson-CSF. System for digitizing transient signals. 4,353,057, Cl. 340-347.0SH.

Bernstein, Robert G.; and Clunies, David A., to Fairchild Industries, Inc. Self-erecting floatable structure. 4,353,071, Cl. 343-709.000.

Berry, Daniel G.; and Markle, David A., to Perkin-Elmer Corporation, The. Automatic mask alignment. 4,353,087, Cl. 358-101.000.

Bertolini, William A. Front locking pin for gooseneck container chassis. 4,352,517, Cl. 296-35.300.

Bertolini, William A. Gear operated twist lock. 4,352,613, Cl. 410-82.000.

Bethlehem Steel Corporation: *See*—
Moore, Edward A., Jr., 4,352,229, Cl. 29-116.00R.

Bettinger, George E.; and Orban, John N., to Du Pont de Nemours, E. I., and Company. Protecting colloidal silica aquasols from bacterial degradation. 4,352,744, Cl. 252-313.00S.

Bezman, Susan A., to Chevron Research Company. Diisopropyl ether reversion in isopropanol production. 4,352,945, Cl. 568-899.000.

Bezner, Baruch J., to Helioset Advanced Technologies Ltd. Method and apparatus for injection-molding a manifold onto a set of hollow elements. 4,352,772, Cl. 264-229.000.

Billett, Ronald J.; Anderson, David N.; and Easter, William M., to FMC Corporation. Method for extracting frozen confections. 4,352,830, Cl. 426-421.000.

Billings, Keith H., to Electrotech Instruments Limited. Switch mode converters. 4,353,113, Cl. 363-21.000.

Binder, Dieter, to Laevosan-Gesellschaft mbH & Co. KG. Novel 1-[3-(2-hydroxy-3-alkylaminopropoxy)-2-thienyl]-3-phenyl-1-propanones and their salts and a process for the preparation thereof. 4,352,819, Cl. 424-275.000.

Biswas, Chandi P.: *See*—
Larson, Hugo R.; and Biswas, Chandi P., 4,352,416, Cl. 188-251.00M.

Bittar, Joseph; and Nowak, Frederick H., to Otis Elevator Company. Operational control of elevator car calls. 4,352,410, Cl. 187-29.00R.

Bittar, Joseph; and Nowak, Frederick H., to Otis Elevator Company. Elevator express priority service. 4,352,412, Cl. 187-29.00R.

Bittar, Joseph: *See*—
Nowak, Frederick H.; and Bittar, Joseph, 4,352,411, Cl. 187-29.00R.

Bjorklund, Gary C.; Bloom, David M.; and Liao, Paul F., to Bell Telephone Laboratories, Incorporated. Detection of birefringence in irregularly shaped objects. 4,352,566, Cl. 356-364.000.

Black Clawson Inc.: *See*—
Artiano, Adrian, 4,352,431, Cl. 209-600.000.

Black & Decker Inc.: *See*—
Wagster, Robert P., 4,352,489, Cl. 269-75.000.

Black, William C., to National Semiconductor Corporation. CMOS Latch-up protection circuit. 4,353,105, Cl. 361-101.000.

Blakeslee, Frederick R., to Textron, Inc. Combined payoff and winder for strip rolling mills. 4,352,470, Cl. 242-72.100.

Blaney, Frank E., to Beecham Group Limited. Bicyclo[3.3.1]nonyl-benzamide. 4,352,802, Cl. 424-246.000.

Blattry, Hans; and Antoni, Herbert, to Paul Forkardt Kommanditgesellschaft. Clamping chuck for turning machines. 4,352,500, Cl. 279-121.000.

Blay, George A.; and Witt, Enrique R., to Celanese Corporation. Anaerobic filter. 4,352,738, Cl. 210-612.000.

Bloom, David M.: *See*—
Bjorklund, Gary C.; Bloom, David M.; and Liao, Paul F., 4,352,566, Cl. 356-364.000.

Boccardo, Hector O. M.; and Jolly, Thomas W., to Commonwealth Industrial Gases Limited, The. Pressure vessel safety valve. 4,352,365, Cl. 137-68.00R.

Bochumer Eisenhuette Heintzmann GmbH & Co.: *See*—
Plaga, Kurt, 4,352,602, Cl. 405-291.000.

Bock, Ditmar H., to Calspan Corporation. Orthogonal signal generator. 4,353,031, Cl. 328-62.000.

Boden, Richard M.; and Geiger, John H., Jr, John H., to International Flavors & Fragrances Inc. Process for augmenting or enhancing the aroma of a detergent with aliphatic C_{11} branched chain aldehydes and alcohols. 4,352,743, Cl. 252-174.110.

Boeing Company, The: *See*—
Yankovoy, Alexander; and Ozer, Theodore, 4,352,610, Cl. 408-1.00R.

Boelens, Harmannus: *See*—
Traas, Petrus C.; Renes, Harrie; and Boelens, Harmannus, 4,352,748, Cl. 252-522.00R.

Boettner, George B., to Corning Glass Works. Furnace delivery system. 4,352,687, Cl. 65-134.000.

Bogorsky, Mikhail V.: *See*—
Lebedev, Vladimir K.; Kuchuk-Yatsenko, Sergei I.; Krivenko, Valery G.; Bogorsky, Mikhail V.; Cherednichok, Vitaly T.; Toldin, Anatoly A.; and Sakharnov, Vasily A., 4,352,972, Cl. 219-100.000.

Bohg, Armin, to International Business Machines Corporation. Apparatus for controlling a recorder. 4,353,076, Cl. 346-65.000.

Bolderoff, Jack. Container handling apparatus. 4,352,625, Cl. 414-494.000.

Bolton, Colin B.; Miles, Alan J.; and Simpson, Robert E., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Protective clothing. 4,352,353, Cl. 128-201.240.

Bom, Cornelis J. G.: *See*—
van der Lely, Ary; and Bom, Cornelis J. G., 4,352,268, Cl. 56-370.000.

Bonaddio, Robert M.; and Dahlberg, John R., to PPG Industries, Inc. Method of and apparatus for sideward displacement of sheets. 4,352,447, Cl. 225-2.000.

Bondinell, William E.; DeMarinis, Robert M.; Hieble, Jacob P.; and Pendleton, Robert G., to Smithkline Corporation. Method of producing alpha$_2$ antagonism. 4,352,809, Cl. 424-258.000.

Boone, Charles A.; and Pfeifer, Robert F., to Motorola Inc. Data security module. 4,352,952, Cl. 178-22.090.

Borg, Bernt V.: *See*—
Lewis, Roy D.; and Borg, Bernt V., 4,352,444, Cl. 222-309.000.

Borg-Warner Corporation: *See*—
Smith, Grant H., 4,352,276, Cl. 464-109.000.

Born, Maurice: *See*—
Jacquin, Yves; Huynh, Dai-Nghia; and Born, Maurice, 4,352,729, Cl. 208-209.000.

Born, Vernon A., to Minnesota Mining and Manufacturing Company. Linear motor control system for brushless DC motor. 4,353,016, Cl. 318-254.000.

Bornstein, Norman D., to W. R. Grace & Co. Method of making a thermoplastic receptacle having improved high temperature seal. 4,352,702, Cl. 156-84.000.

Bornstein, Norman D., to W. R. Grace & Co. Thermoplastic film having improved handling and sealing characteristics and receptacle formed therefrom. 4,352,844, Cl. 428-35.000.

Bostroem, Theodore. Dipless metallizing process. 4,352,838, Cl. 427-209.000.

Bowbin, John F.: *See*—
Kolchinsky, Abel E.; Bowbin, John F.; and Davis, Wayne M., 4,352,318, Cl. 91-395.000.

Bowditch, Malcolm R., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Energy in Her Britannic Majesty's Government of the. Surface pre-treatment prior to underwater bonding. 4,352,841, Cl. 427-292.000.

Bowmar, Bryce: *See*—
Siemsen, Henry S., 4,352,639, Cl. 417-134.000.

Bozik, John E.: *See*—
Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., 4,352,946, Cl. 568-902.000.

Bracco Industria Chimica S.p.A.: *See*—
Felder, Ernst; and Pitre, Davide, 4,352,788, Cl. 424-5.000.

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Bradley, Martin P. T.: *See*—
Patterson, Williams G.; Rochkind, Allen B.; Miller, Leslie A.; and Bradley, Martin P. T., 4,352,636, Cl. 417-22.000.

Bradley, Norbert L.; Cleereman, Kenneth J.; and Wessling, Ritchie A., to Dow Chemical Co., The. Scrapless forming of plastic articles. 4,352,766, Cl. 264-45.500.

Brandberg, S. B. Thomas: *See*—
Rosenlind, K. Goran; and Brandberg, S. B. Thomas, 4,352,441, Cl. 222-99.000.

Brandenburg, Lloyd W., Jr., to J. I. Case Company. Cab heating system. 4,352,456, Cl. 237-12.30R.

Brandenstein, Manfred: *See*—
Olschewski, Armin; Brandenstein, Manfred; and Walter, Lothar, 4,352,419, Cl. 192-98.000.

Brandow, Charles R.: *See*—
Berger, Harvey L.; and Brandow, Charles R., 4,352,459, Cl. 239-102.000.

Branson Ultrasonics Corporation: *See*—
Toth, Leslie, 4,352,711, Cl. 156-497.000.

Brauer, Roger L. Prefabricated vehicle maintenance apparatus. 4,352,322, Cl. 98-33.00R.

Braun, Jimmy E.: *See*—
Anderson, Jared A.; Van Gelder, Robert V.; Yazolino, Lauren F.; and Braun, Jimmy E., 4,352,274, Cl. 62-229.000.

Brenner, Hermann, to Grossbuchbinderei Sigloch GmbH & Co. KG. Device for arranging objects in stacking layers, for loading pallets. 4,352,616, Cl. 414-31.000.

Brenot, Claude G. Steam generator with direct evaporation. 4,352,252, Cl. 38-16.000.

Breslow, David S., to Hercules Incorporated. Epoxy-azidoformate compounds. 4,352,938, Cl. 549-553.000.

Brest van Kempen, Carel J. H. Device and method for controlling time dependent parameter variability. 4,352,600, Cl. 405-259.000.

Bridel, Laiteries E.: *See*—
Rialland, Jean P.; and Barbier, Jean P., 4,352,828, Cl. 426-271.000.

Bridgestone Tire Co., Ltd.: *See*—
Matsumoto, Kenji; and Suzuki, Yasuo, 4,352,383, Cl. 152-352.00R.

Bristol-Myers Company: *See*—
Kaneko, Takushi, 4,352,936, Cl. 549-332.000.

British Aerospace: *See*—
Morrison, Jeffrey; Dixon, Stanley R. E.; and Barnes, Arthur G., 4,352,664, Cl. 434-14.000.

Broadbent, Kent D., to Discovision Associates. Extended play video recording and reproducing system with selection of multiplexed audio. 4,353,090, Cl. 358-342.000.

Brunner, Anton; and Kress, Erwin, to Siemens Aktiengesellschaft. Antenna arrangement for a radar surveillance method for target locating with altitude acquisition. 4,353,073, Cl. 343-779.000.

Bryan, Deborah L.: *See*—
Gleason, John G.; Kinzig, Charles M.; and Bryan, Deborah L., 4,352,757, Cl. 549-513.000.

Bryans, Lawrence G.; and Murchison, Loren R., to Ford Aerospace & Communications Corp. Selectable linear or circular polarization network. 4,353,041, Cl. 333-21.00A.

Buchs, Wolfgang; Nowak, Franz; and Woerndle, Rudolf, to Messerschmitt-Boelkow-Blohm GmbH. Hingeless rotor, especially for a helicopter. 4,352,631, Cl. 416-134.00A.
Buchtel, Dean H., to Hoover Company, The. Switch actuating mechanism. 4,352,967, Cl. 200-153.00J.
Buennagel, James A.; and Koch, Richard C., to Regency Electronics, Inc. Apparatus for addressably controlling remote units. 4,352,992, Cl. 307-40.000.
Burgess, Asial L., Jr.: *See*—
Hardigg, James S.; Strzegowski, Joseph C., Jr.; Burgess, Asial L., Jr.; and Neal, David B., 4,352,977, Cl. 219-243.000.
Burkarth, Jack L., to Gulton Industries, Inc. Air diffuser. 4,352,323, Cl. 98-40.00D.
Burke, Edward F., Jr., to M.F.E. Corporation. Velocity compensation for limited displacement motors. 4,353,017, Cl. 318-331.000.
Burke, John A.; and Gross, James B., to Greene, Tweed & Co., Inc. Spring seal. 4,352,498, Cl. 277-1.000.
Burney, Charles F., to Travel Accessories Manufacturing Co., Inc. Vehicle speed control system. 4,352,403, Cl. 180-176.000.
Burroughs Corporation: *See*—
Nemiroff, Michael H., 4,352,862, Cl. 428-694.000.
Bursk, William M.; and Doll, Jacob G., to Pease Company. Adjustable sill and threshold. 4,352,258, Cl. 49-468.000.
Buske, Ervin; and Buske, Gerd, to Buske Industries, Inc. Sheet metal panel brake. 4,352,282, Cl. 72-321.000.
Buske, Gerd: *See*—
Buske, Ervin; and Buske, Gerd, 4,352,282, Cl. 72-321.000.
Buske Industries, Inc.: *See*—
Buske, Ervin; and Buske, Gerd, 4,352,282, Cl. 72-321.000.
Butler, John; Valle, L. George; and Wall, Donald E., to Liken Home Furnishings. Automatic cord lock device. 4,352,386, Cl. 160-178.00C.
Butschko, Gerhard: *See*—
Steiner, Janos; Wenzly, Kalman; Toth, Jozsef T.; Tiggesbaumker, Peter; Goldmann, Wolf; and Butschko, Gerhard, 4,352,660, Cl. 432-14.000.
C. van der Lely N.V.: *See*—
van der Lely, Ary; and Bom, Cornelis J. G., 4,352,268, Cl. 56-370.000.
Calspan Corporation: *See*—
Bock, Ditmar H., 4,353,031, Cl. 328-62.000.
Campbell, Diane, administratrix: *See*—
Michaud, Roger P.; and Campbell, Douglas B., deceased, 4,352,656, Cl. 431-72.000.
Campbell, Douglas B., deceased: *See*—
Michaud, Roger P.; and Campbell, Douglas B., deceased, 4,352,656, Cl. 431-72.000.
Canadian General Electric Company Limited: *See*—
Chippel, Bob M., 4,353,108, Cl. 361-386.000.
Canon Kabushiki Kaisha: *See*—
Ishihara, Shunichi; Nishigaki, Yuji; Kitajima, Nobuo; and Kitahara, Nobuko, 4,352,875, Cl. 430-42.000.
Kawanabe, Tsuyoshi, 4,353,079, Cl. 346-140.00R.
Minoura, Kazuo; and Minami, Setsuo, 4,352,541, Cl. 350-6.600.
Takeda, Takashi; Ogata, Minoru; and Kurabayashi, Sadasuke, 4,353,097, Cl. 358-287.000.
Capurro, Sergio. Timed diathermocautery comprising a timer unaffected by disturbances of electromagnetic origin. 4,352,357, Cl. 128-303.130.
Carascon, Walter; Dyett, Derek H.; and Hoath, Grantley R., to Molins Limited. Feeding device for cigarette filters and similar rods. 4,352,604, Cl. 406-28.000.
Carasso, Marino G.; and Nijboer, Jakob G., to U.S. Philips Corporation. Device for processing serial information which includes synchronization words. 4,353,130, Cl. 375-114.000.
Carasso, Marino G.: *See*—
van Tongeren, Hendricus F. J. J.; Schampers, Paulus P. M.; Weijland, Willem P.; and Carasso, Marino G., 4,353,005, Cl. 313-371.000.
Cardiet, Gerard: *See*—
Gallitzendorfer, Josef; Cardiet, Gerard; and Tomforde, Johann, 4,353,111, Cl. 362-80.000.
Carino, Charles M. Protective shield for open container. 4,352,438, Cl. 220-90.000.
Carl Freudenberg, Firma: *See*—
Lohmar, Ernst, 4,352,892, Cl. 521-79.000.
Carl Freudenberg, Firma: *See*—
Passler, Michael; Tecl, Bohuslav; and Schumacher, Rolf, 4,352,846, Cl. 428-105.000.
Carl Still GmbH & Co., KG, Firma: *See*—
Weber, Heinrich; Lorenz, Kurt; Dungs, Horst; and Urbye, Klaus, 4,352,720, Cl. 202-124.000.
Carlingswitch, Inc.: *See*—
Sorenson, Richard W., 4,352,965, Cl. 200-6.00R.
Carson, John C.; and Dahlgren, Paul F., to Irvine Sensors Corporation. Detector array module fabrication. 4,352,715, Cl. 156-634.000.
Carswell, Angela M.: *See*—
Robinson, Joseph G.; Carswell, Angela M.; and Barnes, David I., 4,352,922, Cl. 528-232.000.
Catanzarite, Vincent O., to Altus Corporation. Electrochemical cell structure. 4,352,867, Cl. 429-101.000.
Caterpillar Tractor Co.: *See*—
Vidal-Meza, Gonzalo D., 4,352,393, Cl. 165-166.000.
Cavanagh, John F.; and Cavanagh, Paul A., to Cavanagh & Sons. Method for manufacturing wafers. 4,352,831, Cl. 426-497.000.
Cavanagh, Paul A.: *See*—
Cavanagh, John F.; and Cavanagh, Paul A., 4,352,831, Cl. 426-497.000.
Cavanagh & Sons: *See*—
Cavanagh, John F.; and Cavanagh, Paul A., 4,352,831, Cl. 426-497.000.
CdF Chimie, Societe Chimique des Charbonnages: *See*—
Decroix, Jean-Yves; Seytre, Gerard; Charlot, Pierre; and Dubois, Jean-Claude, 4,353,107, Cl. 361-323.000.
Ceco Corporation, The: *See*—
Young, Richard A., 4,353,022, Cl. 318-753.000.
Celanese Corporation: *See*—
Blay, George A.; and Witt, Enrique R., 4,352,738, Cl. 210-612.000.
Centre de Recherches Metallurgiques-Centrum voor Research in de Metallurgie: *See*—
Mathy, Henri L.; and DeFourny, Jacques A., 4,352,970, Cl. 219-72.000.
Cerberonics, Inc.: *See*—
Kimble, Joe W.; and Dotson, Edsel E., 4,352,665, Cl. 434-22.000.
Certain-teed Corporation: *See*—
Janssen, Kermit W.; and Mitchell, Andrew, 4,352,512, Cl. 285-419.000.
Kopenhaver, Robert L., 4,352,837, Cl. 427-187.000.
Chambers, James W., to Atwood Vacuum Machine Company. Straddle mount trailer coupler. 4,352,505, Cl. 280-495.000.
Chance, Leon H., to United States of America, Agriculture. Bromine-containing 2,4-diaminotriazines. 4,352,930, Cl. 544-205.000.
Chapman, Ivan B., Jr., to Western Electric Company, Inc. Adjustable support. 4,352,479, Cl. 248-405.000.
Chappell, James. Analog balance. 4,352,978, Cl. 235-70.00R.
Charlot, Pierre: *See*—
Decroix, Jean-Yves; Seytre, Gerard; Charlot, Pierre; and Dubois, Jean-Claude, 4,353,107, Cl. 361-323.000.
Charlotte Pipe and Foundry Company: *See*—
Barber, Jasper D., 4,352,652, Cl. 425-525.000.
Chartier, Robert M.; and Richard, Jean P., to Consumers Glass Company Limited. Pilferproof cap. 4,352,436, Cl. 215-252.000.
Chase, Bryan B., to Crosfield Electronics Limited. Machine for simultaneously turning and laser engraving printing cylinders. 4,352,973, Cl. 219-121.0LH.
Chatterjee, Pallab K., to Texas Instruments Incorporated. Buried sense line V-groove MOS random access memory. 4,353,082, Cl. 357-23.000.
Chemie-Anlagenbau Bischofsheim GmbH: *See*—
Hilterhaus, Karl-Heinz, 4,352,895, Cl. 521-99.000.
Chen, Hwang-Chuan; and Jih, Peter E.P., to Chen, Hwang-Chuan. Continuous and automatic oil-water mixing method and its installation. 4,352,572, Cl. 366-145.000.
Cheney, Marvin C., Jr., to United Technologies Corporation. Wind turbine. 4,352,629, Cl. 416-18.000.
Cherednichok, Vitaly T.: *See*—
Lebedev, Vladimir K.; Kuchuk-Yatsenko, Sergei I.; Krivenko, Valery G.; Bogorsky, Mikhail V.; Cherednichok, Vitaly T.; Toldin, Anatoly A.; and Sakharnov, Vasily A., 4,352,972, Cl. 219-100.000.
Chermin, Hubertus M. J.: *See*—
Palmers, Hilbert; and Chermin, Hubertus M. J., 4,353,116, Cl. 363-133.000.
Cherukuri, Subraman R.; Friello, Dominick R.; Ferroti, Michael; Jewell, Walter; and D'Amelia, Ronald P., to Nabisco Brands Inc. Gum base, chewing gum containing same and method. 4,352,822, Cl. 426-4.000.
Cherukuri, Subraman R.; Roy, Raymond L.; Friello, Dominick R.; and Wolf, Stephen H., to Nabisco Brands, Inc. Coextruded chewing gum containing a soft non-SBR gum core portion. 4,352,823, Cl. 426-5.000.
Cherukuri, Subraman R.; Roy, Raymond L.; Friello, Dominick R.; and Wolf, Stephen H., to Nabisco Brands, Inc. Coextruded chewing gum containing a soft core portion. 4,352,825, Cl. 426-5.000.
Chesler, Richard. Dental appliance cleaning device. 4,352,361, Cl. 134-58.00R.
Chevron Research Company: *See*—
Bezman, Susan A., 4,352,945, Cl. 568-899.000.
Spellmann, Richard A., 4,353,117, Cl. 364-300.000.
Chia, E. Henry: *See*—
Adams, Ronald D.; and Chia, E. Henry, 4,352,697, Cl. 148-2.000.
Chiarelli, Gerard: *See*—
Arnaud, Georges; and Chiarelli, Gerard, 4,352,778, Cl. 376-365.000.
Chida, Yoshinori; and Tada, Satoru, to Seikosha Co., Ltd. Cassette type ink ribbon device. 4,352,577, Cl. 400-196.100.
Childress, Ray; and Childress, Steve. Belt cleaner. 4,352,425, Cl. 198-499.000.
Childress, Steve. Pressure vessel valve housing. 4,352,370, Cl. 137-382.000.
Childress, Steve: *See*—
Childress, Ray; and Childress, Steve, 4,352,425, Cl. 198-499.000.
Childs, William R.; and Melton, Randall. Method and apparatus for stitching material along a curve. 4,352,334, Cl. 112-266.100.
Chippel, Bob M., to Canadian General Electric Company Limited. Frame assembly for electronic components. 4,353,108, Cl. 361-386.000.
Christensen, Inc.: *See*—
Grappendorf, Richard H.; Sirrine, Gordon G.; and Davis, John S., 4,352,400, Cl. 175-330.000.
Christner, Heinz, to Gustav Magenwirth GmbH & Co. Gas control grip for the steering device of a motor-driven double-wheeled vehicle. 4,352,303, Cl. 74-489.000.

Christopher, Glenn B., to Jet Research Center, Inc. Methods, apparatus and pyrotechnic compositions for severing conduits. 4,352,397, Cl. 166-297.000.

Chuang, Wen-Shou: *See—*
Hoh, Ying-Chu; Lee, Bao-Dein; Ma, Tieh; Chuang, Wen-Shou; and Wang, Wei-Ko, 4,352,786, Cl. 423-98.000.

Ciba-Geigy AG: *See—*
Tomka, Ivan, 4,352,695, Cl. 106-135.000.

Ciba-Geigy Corporation: *See—*
Abeler, Gerd, 4,352,903, Cl. 524-100.000.
Zondler, Helmut; and Moser, Roland, 4,352,913, Cl. 525-504.000.

Clark, K. Warren: *See—*
Puglia, Wayne J.; Kehoe, Gary; Witzel, Frank; Clark, K. Warren; and Mackay, Donald A. M., 4,352,824, Cl. 426-5.000.

Claudius Peters AG: *See—*
Grun, Gustav, 4,352,718, Cl. 159-48.00R.
Krauss, Werner, 4,352,569, Cl. 366-107.000.

Cleereman, Kenneth J.: *See—*
Bradley, Norbert L.; Cleereman, Kenneth J.; and Wessling, Ritchie A., 4,352,766, Cl. 264-45.500.

Clunies, David A.: *See—*
Bernstein, Robert G.; and Clunies, David A., 4,353,071, Cl. 343-709.000.

Coal Industry (Patents) Limited: *See—*
Robinson, Joseph G.; Carswell, Angela M.; and Barnes, David I., 4,352,922, Cl. 528-232.000.

Cogswell, Frederic N.; and Tomka, Jiri G., to Imperial Chemical Industries Limited. Method of improving processability of rigid polymers. 4,352,927, Cl. 528-502.000.

Collonia, Harald, to VDO Adolf Schindling AG. Safety circuit for an apparatus for regulating the traveling speed of a vehicle. 4,352,402, Cl. 180-170.000.

Combes, Claude; Arnaudis, Jean; Arnaudis, Germaine; and Marcou, Lucien, to Produits Chimiques de la Montagne Noire. Method of combating cercariae using certain amphoteric surface active agents. 4,352,812, Cl. 424-273.00R.

Commercial Shearing, Inc.: *See—*
Williams, Arthur J., 4,352,375, Cl. 137-596.130.

Commissariat a l'Energie Atomique: *See—*
Arnaud, Georges; and Chiarelli, Gerard, 4,352,778, Cl. 376-365.000.
Perodjon, Jean, 4,352,294, Cl. 73-642.000.

Commonwealth Industrial Gases Limited, The: *See—*
Boccardo, Hector O. M.; and Jolly, Thomas W., 4,352,365, Cl. 137-68.00R.

Compagnie Francaise des Petroles: *See—*
Fery, Jean J., 4,352,674, Cl. 23-230.0EP.

Compagnie Generale pour les Developpements Operationnels des Richesses Sous-Marines "C.G. Doris": *See—*
Parat, Hubert J. L.; Michel, Dominique; and Sedillot, Francois G., 4,352,598, Cl. 405-222.000.

Conair, Inc.: *See—*
Peterson, Russell I., Jr., 4,352,426, Cl. 198-657.000.

Concorde Battery Corp.: *See—*
Orsino, Joseph A.; Sawyer, Ernest R.; and Hollet, Ronald J., 4,352,364, Cl. 137-43.000.

Conoco Inc.: *See—*
Goldsmith, Riley G., 4,352,599, Cl. 405-224.000.

Consumers Glass Company Limited: *See—*
Chartier, Robert M.; and Richard, Jean P., 4,352,436, Cl. 215-252.000.

Contraves AG: *See—*
Meier, Walter, 4,352,950, Cl. 174-35.00C.

Cook, P. Dan, to Warner-Lambert Company. 7-β-D-Arabinofuranosyl-7H-pyrrolo[2,3-d]pyrimidine compounds and methods for their production. 4,352,795, Cl. 424-180.000.

Cooke, Anson R.: *See—*
Fritz, Charles D.; Evans, Wilbur F.; and Cooke, Anson R., 4,352,689, Cl. 71-86.000.

Cookson, Alan H., to United States of America, Energy. Transmission line including support means with barriers. 4,352,949, Cl. 174-27.000.

Cooley, William H.: *See—*
Allison, Kenneth C.; and Cooley, William H., 4,352,589, Cl. 403-408.000.

Coomber, Barry A.: *See—*
Phillipps, Gordon H.; Humber, David C.; Ewan, George B.; and Coomber, Barry A., 4,352,798, Cl. 424-242.000.

Corbin, Edgar A., Jr.: *See—*
Pearline, Donald I.; Corbin, Edgar A., Jr.; and Garner, Marvin A., 4,352,826, Cl. 426-39.000.

Cornelius, Gail; and Olson, Lloyd C., to R. M. Wade & Co. Irrigation line wind brace. 4,352,464, Cl. 239-713.000.

Corning Glass Works: *See—*
Boettner, George B., 4,352,687, Cl. 65-134.000.

Cotter, James F. Automatic transmission shifter for bicycles. 4,352,503, Cl. 280-238.000.

CPT Corporation: *See—*
Lehman, Frederick D., 4,353,013, Cl. 315-387.000.

Cremona, Angelo. Log clamping devices used in half round or stay log cutting. 4,352,488, Cl. 269-54.200.

Crookston, James A.; and Hill, James L., to A. P. Green Refractories Co. Shaft kiln. 4,352,661, Cl. 432-14.000.

Crosby, E. Eugene, to Owens-Corning Fiberglas Corporation. Spinner rotating apparatus. 4,352,686, Cl. 65-15.000.

Crosby, Lawton H., to Morley Furniture Spring Corporation. Improvement in upholstered furniture. 4,352,524, Cl. 297-452.000.

Crosfield Electronics Limited: *See—*
Chase, Bryan B., 4,352,973, Cl. 219-121.0LH.

Cross, David A., to Xerox Corporation. Control system for electrographic stylus writing apparatus. 4,353,080, Cl. 346-153.100.

Croxen, Robert E.: *See—*
Beevers, Shannon D.; and Croxen, Robert E., 4,352,668, Cl. 114-344.000.

Crutcher Resources Corporation: *See—*
LaRue, Forrest N.; and Wheeler, Lionel H., 4,352,285, Cl. 72-466.000.

Cser, Gyula; and Pataki, Arpad, to Autoipari Kutato Intezet. Automatic ventilation apparatus for liquid systems with forced flow. 4,352,342, Cl. 123-41.540.

CTS Corporation: *See—*
English, Jack A., 4,352,964, Cl. 200-5.00A.
English, Jack A.; Greve, James E.; Hufford, James N.; and Priebe, Durward H., 4,352,966, Cl. 200-16.00D.

Cubberly, Walter E., Jr., to Schlumberger Technology Corporation. Differential noise logging method and apparatus. 4,353,122, Cl. 367-25.000.

Cummiskey, Peter, to Bell Telephone Laboratories, Incorporated. Synchronous/asynchronous data communication arrangement. 4,353,128, Cl. 370-44.000.

Cuny, Eckehard K. T.; Lichtenthaler, Frieder W.; and Moser, Alfred R., to Siegfried Aktiengesellschaft. Lin-benzoaminopurinols. 4,352,931, Cl. 544-251.000.

Curchod, Donald B.; and Arnold, Arthur K., to Nortron Corporation. Wheel balancing machine. 4,352,291, Cl. 73-462.000.

Curtis, Benson M.: *See—*
Scurlock, James E.; and Curtis, Benson M., 4,352,820, Cl. 424-329.000.

Custom Plastics, Inc.: *See—*
Tisbo, Cosmo N.; and Tisbo, Thomas A., 4,352,888, Cl. 435-287.000.

Cusumano, Philip; and Cusumano, Vincent. Building material applicator. 4,352,445, Cl. 222-611.000.

Cusumano, Vincent: *See—*
Cusumano, Philip; and Cusumano, Vincent, 4,352,445, Cl. 222-611.000.

Dahlberg, John R.: *See—*
Bonaddio, Robert M.; and Dahlberg, John R., 4,352,447, Cl. 225-2.000.

Dahlgren, Paul F.: *See—*
Carson, John C.; and Dahlgren, Paul F., 4,352,715, Cl. 156-634.000.

Daihatsu Motor Co., Ltd.: *See—*
Kawakatsu, Shiro; and Kawasaki, Toshikazu, 4,353,055, Cl. 340-52.00D.

Daimler-Benz Aktiengesellschaft: *See—*
Gallitzendorfer, Josef; Cardiet, Gerard; and Tomforde, Johann, 4,353,111, Cl. 362-80.000.

Dainippon Pharmaceutical Co., Ltd.: *See—*
Matsumoto, Jun-ichi; Takase, Yoshiyuki; and Nishimura, Yoshiro, 4,352,803, Cl. 424-251.000.

Dakin, Wayne R.: *See—*
Winslow, John S.; and Dakin, Wayne R., 4,353,089, Cl. 358-337.000.

Daly, James M., to Rocket Research Company. Catalytic gas generator. 4,352,782, Cl. 422-179.000.

Dam, Robert, to Zenith Radio Corporation. Adjustable yoke assembly. 4,353,094, Cl. 358-249.000.

D'Amelia, Ronald P.: *See—*
Cherukuri, Subraman R.; Friello, Dominick R.; Ferroti, Michael; Jewell, Walter; and D'Amelia, Ronald P., 4,352,822, Cl. 426-4.000.

Damon Corporation: *See—*
Lim, Franklin, 4,352,883, Cl. 435-178.000.

Daniel, Sam M.; and McRoberts, Louis A., to Motorola Inc. Adaptive antenna array including batch covariance relaxation apparatus and method. 4,353,119, Cl. 364-517.000.

Dasco Products, Inc.: *See—*
Provi, Michael A., 4,352,381, Cl. 145-2.00R.

Davies, Benjamin, III. Wood joint. 4,352,588, Cl. 403-382.000.

Davis, John S.: *See—*
Grappendorf, Richard H.; Sirrine, Gordon G.; and Davis, John S., 4,352,400, Cl. 175-330.000.

Davis, Kenneth. Bit breaker and handle. 4,352,399, Cl. 175-315.000.

Davis, Lois T.: *See—*
Pillis, Lewis J.; and Davis, Lois T., 4,352,886, Cl. 435-262.000.

Davis, Paul C.; Jackson, Raymond G.; Nahas, Joseph J.; Nelson, Dale H.; Ong, DeWitt G.; and Wittman, Brian A., to Bell Telephone Laboratories, Incorporated. Electronically-switched multifrequency generator with transducer control. 4,352,958, Cl. 179-84.0VF.

Davis, Pauls; and Wilson, Joe C., to BASF Wyandotte Corporation. Alcohol composition containing novel hydroxy-substituted aliphatic silicone sulfonate-silicate copolymers. 4,352,742, Cl. 252-75.000.

Davis, Wayne M.: *See—*
Kolchinsky, Abel E.; Bowbin, John F.; and Davis, Wayne M., 4,352,318, Cl. 91-395.000.

DBM Industries Limited: *See—*
Perrella, Guido, 4,352,388, Cl. 164-305.000.

Dearborn Chemical Company: *See—*
Every, Richard L.; Lewandowski, Franklin D.; and Lech, Jerome F., 4,352,747, Cl. 252-500.000.

Decroix, Jean-Yves; Seytre, Gerard; Charlot, Pierre; and Dubois, Jean-Claude, to CdF Chimie, Societe Chimique des Charbonnages; and Thomson-CSF. Electrical capacitor. 4,353,107, Cl. 361-323.000.

De Filippis, Pietro; Salvatore, Amedeo; and Abbondandolo, Luigi, to Texas Instruments Incorporated. Low profile microswitches, particularly useful for the composition of keyboards and method of making. 4,352,963, Cl. 200-5.00A.

DeFourny, Jacques A.: *See—*
Mathy, Henri L.; and DeFourny, Jacques A., 4,352,970, Cl. 219-72.000.

Deft, Inc.: *See—*
Albers, Richard A., 4,352,898, Cl. 523-414.000.

de Haan, Friedrich J., administrator: *See—*
Franssen, Nico V., deceased; and de Haan, Friedrich J., administrator, 4,352,954, Cl. 179-1.00J.

De Jong, Aaldert J.: *See—*
Gray, Robin T.; and De Jong, Aaldert J., 4,352,937, Cl. 549-546.000.

de Jong, Leonardus P. A.: *See—*
Benschop, Hendrik P.; Kepner, Larry A.; and de Jong, Leonardus P. A., 4,352,810, Cl. 424-263.000.

DeLucia, Victor E. Gas-filled envelope enclosed high voltage relay. 4,353,048, Cl. 335-151.000.

DeMaria, Francesco, to American Cyanamid Company; and Hamilton, Relmond H. Reinforced plastic matrix of thermosetting resin embedded with acrylonitrile polymer fiber. 4,352,852, Cl. 428-290.000.

DeMarinis, Robert M.: *See—*
Bondinell, William E.; DeMarinis, Robert M.; Hieble, Jacob P.; and Pendleton, Robert G., 4,352,809, Cl. 424-258.000.

Demmer, Erhard: *See—*
Janovsky, Franz; and Demmer, Erhard, 4,352,352, Cl. 128-76.00R.

Denman, Owen S.: *See—*
Gertz, David C.; and Denman, Owen S., 4,352,484, Cl. 256-13.100.

Dennison Manufacturing Company: *See—*
Amberkar, Suresh D., 4,352,684, Cl. 55-382.000.

den Toonder, Pieter; and Fondse, Pieter J., to Oak Industries, Inc. Coding and decoding system for video and audio signals. 4,353,088, Cl. 358-120.000.

Dettke, Manfred; and Stein, Ludwig, to Schering Aktiengesellschaft. Acid gold bath for the electroless deposition of gold. 4,352,690, Cl. 106-1.230.

Development Finance Corporation of New Zealand, The: *See—*
Hennessy, John B.; and Twizell, Rodney J., 4,352,245, Cl. 33-169.00B.

Devlin, Thomas A., to Vultron, Inc. Bus destination sign with programmed destination name and manually settable route numbers for combined display. 4,353,063, Cl. 340-798.000.

de Vries, Huibert, to Koninklijke Bos Kalis Westminster Group N.V. Suction dredger installation. 4,352,250, Cl. 37-58.000.

Deyrup, Edward J., to Du Pont de Nemours, E. I., and Company. Molding resins. 4,352,904, Cl. 524-292.000.

Dezaki, Yoshito: *See—*
Tatematsu, Kenzou; Sugihara, Yasuhiro; Andou, Hiroyuki; Seki, Tatsuo; Dezaki, Yoshito; and Nishino, Yasukazu, 4,353,095, Cl. 358-260.000.

Didier Engineering GmbH: *See—*
Flockenhaus, Claus; Joseph, Horst; and Meckel, Joachim, 4,352,618, Cl. 414-148.000.
Hackler, Erich, 4,352,680, Cl. 55-48.000.

Diebold Incorporated: *See—*
Anders, Walter G., 4,352,603, Cl. 406-27.000.

Dietz, Peter W., to General Electric Company. Electrostatically augmented cyclone apparatus. 4,352,681, Cl. 55-127.000.

Dijkhuis, Jacob I., to Holec N.V. Method for cleaning a magnetic separator and magnetic separator. 4,352,730, Cl. 209-8.000.

Dimitraki, Sergei N.: *See—*
Grechanliisky, Stepan S.; Grishanov, Ivan I.; Dimitraki, Sergei N.; Miroshnichenko, Vladimir S.; and Nastas, Vitaly I., 4,352,465, Cl. 242-7.120.

Dineen, John J., to Mechanical Technology Incorporated. Stirling engine combustor. 4,352,269, Cl. 60-517.000.

Dinwiddie, Kendall L.; Racz, Janos A.; and Seppi, Edward J., to General Electric Company. Rotary feed for tonographic scanning apparatus. 4,352,530, Cl. 339-5.00M.

DiPasquale, Renato, to Energy Research Corporation. Fuel cell matrix having curling compensation. 4,352,865, Cl. 429-41.000.

Discovision Associates: *See—*
Broadbent, Kent D., 4,353,090, Cl. 358-342.000.
Winslow, John S.; and Dakin, Wayne R., 4,353,089, Cl. 358-337.000.

Dixon, Stanley R. E.: *See—*
Morrison, Jeffrey; Dixon, Stanley R. E.; and Barnes, Arthur G., 4,352,664, Cl. 434-14.000.

Dobbs, Gregg; and Dobbs, Laura P., to Fotozines, Inc. Controlled double exposure method and apparatus. 4,352,555, Cl. 355-77.000.

Dobbs, Laura P.: *See—*
Dobbs, Gregg; and Dobbs, Laura P., 4,352,555, Cl. 355-77.000.

Dobkin, Robert C., to Hybrinetics, Inc. Phase controlled voltage reducing circuit having line voltage compensation. 4,353,025, Cl. 323-300.000.

Dr. Ing. h.c.F. Porsche Aktiengesellschaft: *See—*
Trenkler, Werner, 4,352,521, Cl. 296-191.000.

Dohren, Hans: *See—*
Seipenbusch, Jurgen; and Dohren, Hans, 4,352,675, Cl. 48-73.000.

Doll, Jacob G.: *See—*
Bursk, William M.; and Doll, Jacob G., 4,352,258, Cl. 49-468.000.

Doorakian, George A.: *See—*
Whiteside, Ross C., Jr.; Gist, Adolphus V.; and Doorakian, George A., 4,352,918, Cl. 528-89.000.

Doran, Mark A.; and Rumolo, Thomas R., to Shaklee Corporation. Sweet tableting agent. 4,352,821, Cl. 424-361.000.

Dorfman, Walter, to Moffatt, Alfred T., a part interest. Display apparatus for a drum. 4,353,008, Cl. 315-114.000.

Dormer, Kenneth J.; and Richard, Gordon L., to Baptist Medical Center of Oklahoma, Inc. Magnetic transcutaneous mount for external device of an associated implant. 4,352,960, Cl. 179-107.0BC.

D'Oro, Enzo C.; and Ocera, Girolamo, to Italtel S.p.A. Differential phase shifter for a waveguide carrying high-power microwaves. 4,353,042, Cl. 333-24.100.

Dotson, Edsel E.: *See—*
Kimble, Joe W.; and Dotson, Edsel E., 4,352,665, Cl. 434-22.000.

Doucet, Charles. Method of filtering a fluid and filter. 4,352,734, Cl. 210-741.000.

Doura, Fumihiro: *See—*
Nakabayashi, Masamitsu; Doura, Fumihiro; Miyamoto, Reiji; and Tatsumi, Tetsujiro, 4,352,749, Cl. 525-149.000.

Dow Chemical Co., The: *See—*
Bradley, Norbert L.; Cleereman, Kenneth J.; and Wessling, Ritchie A., 4,352,766, Cl. 264-45.500.
Whiteside, Ross C., Jr.; Gist, Adolphus V.; and Doorakian, George A., 4,352,918, Cl. 528-89.000.

Dowa Mining Co., Ltd.: *See—*
Watanabe, Yasuo; Isoyama, Seizi; and Yamamichi, Yoshikazu, 4,352,717, Cl. 159-4.00E.

Dresser Industries, Inc.: *See—*
Orth, Heinz W.; and Sloot, James W., 4,352,287, Cl. 73-60.000.

Dubinenko, Askold F.: *See—*
Goldraikh, Genrikh M.; Dubinenko, Askold F.; Kapitelman, Leonid V.; Krivak, Viktor A.; Livshits, Viktor Y.; Manenkov, Konstantin M.; Khomutov, Semen M.; and Khomchenko, Eduard N., 4,352,611, Cl. 408-37.000.

Dubois, Jean-Claude: *See—*
Decroix, Jean-Yves; Seytre, Gerard; Charlot, Pierre; and Dubois, Jean-Claude, 4,353,107, Cl. 361-323.000.

Dugua, Jacques, to PCUK Produits Chimiques Ugine Kuhlmann. Spherical crystalline sodium uranate and process of producing same by adjusting the uranium containing solution in crystallizer. 4,352,857, Cl. 428-402.000.

Dungs, Horst: *See—*
Weber, Heinrich; Lorenz, Kurt; Dungs, Horst; and Urbye, Klaus, 4,352,720, Cl. 202-124.000.

Dunlop Limited: *See—*
Williams, Arthur R.; and Williams, Gareth T., 4,352,704, Cl. 156-125.000.

Dunn, William F.; and Milan, Ernest A., to Goodyear Tire & Rubber Company, The. Method of spiral winding strip material. 4,352,467, Cl. 242-55.000.

Dunning, Norman D.; Jervis, Franklin D.; and Taylor, Kenneth W., to International Business Machines Corporation. Paperboard ribbon cartridge. 4,352,578, Cl. 400-208.000.

Du Pont de Nemours, E. I., and Company: *See—*
Adelman, Robert L.; and Segars, Roy, Jr., 4,352,940, Cl. 562-607.000.
Bettinger, George E.; and Orban, John N., 4,352,744, Cl. 252-313.00S.
Deyrup, Edward J., 4,352,904, Cl. 524-292.000.
Marshall, Larry R., 4,352,650, Cl. 425-174.80E.

Durbin, Jesse, Jr.; and Pritchard, Dalton H., to RCA Corporation. Impulse noise reduction system for TV receivers. 4,353,093, Cl. 358-160.000.

Durkoppwerke GmbH: *See—*
Grube, Erwin, 4,352,328, Cl. 104-172.00S.

Duvall, Paul F., to Foseco Trading AG. Hot tops. 4,352,482, Cl. 249-106.000.

Duveau, Francois, to Pompes Essa Mico. Apparatus for the accumulation and release of energy. 4,352,298, Cl. 74-84.00R.

Dyett, Derek H.: *See—*
Carascon, Walter; Dyett, Derek H.; and Hoath, Grantley R., 4,352,604, Cl. 406-28.000.

Dynamit Nobel: *See—*
Schmidt, Werner, 4,352,894, Cl. 521-91.000.

Dynamit Nobel Aktiengesellschaft: *See—*
Spiess, Karl-Heinz; and Stock, Harald, 4,352,672, Cl. 8-444.000.

Dzioba, Donald L.: *See—*
Wendler, Paul O.; and Dzioba, Donald L., 4,352,296, Cl. 74-55.000.

Dzus Fastener Co., Inc.: *See—*
Gunther, Conrad J., 4,352,513, Cl. 292-113.000.

E. Blum GmbH & Co.: *See—*
Geschka, Hugo-Werner, 4,353,052, Cl. 336-210.000.

Easter, William M.: *See—*
Billett, Ronald J.; Anderson, David N.; and Easter, William M., 4,352,830, Cl. 426-421.000.

Eastman, George Y., to Thermacore, Inc. Mechanically assisted evaporator surface. 4,352,392, Cl. 165-104.250.

Eastman Kodak Company: *See—*
Petke, Frederick D.; Sublett, Bobby J.; and McConnell, Richard L., 4,352,925, Cl. 528-309.000.
Wooten, Willis C.; Jackson, Winston J., Jr.; and Kuhfuss, Herbert F., 4,352,924, Cl. 528-302.000.

Eaton Corporation: *See—*
Kolze, Lawrence A., 4,352,372, Cl. 137-504.000.

Eckert, Ronald P., to Thomas A. Schutz Co., Inc. Component for a multiplanar device. 4,352,843, Cl. 428-33.000.

Edelmann, Frank E.; and Post, James R. Method of sealing cracks and apparatus therefor. 4,352,262, Cl. 52-744.000.

Edgington, Robert E. Method for soldering aluminum. 4,352,450, Cl. 228-205.000.
Edwards, Harry J., Jr. Short chaser with relay operated indicator for locating and indicating the clearance of short circuits. 4,353,026, Cl. 324-51.000.
Edwards, Ralph W., to General Motors Corporation. Telescoping vehicle radio antenna with compressible O-ring seal. 4,353,075, Cl. 343-903.000.
Efuti Giken Co., Ltd.: *See*—
Kawai, Tsutomu, 4,353,101, Cl. 360-85.000.
Eggert, John N.: *See*—
Revells, Robert G.; and Eggert, John N., 4,352,221, Cl. 15-77.000.
Eguchi, Osamu: *See*—
Fukui, Tomonori; and Eguchi, Osamu, 4,352,321, Cl. 98-2.110.
Eisai Co., Ltd.: *See*—
Nomoto, Seiichiro; Ikuta, Hironori; Machida, Yoshimasa; Negi, Shigeto; Sugiyama, Isao; Yamauchi, Hiroshi; Nakatsuka, Kenro; and Saito, Isao, 4,352,801, Cl. 424-246.000.
Eisenstadt Company: *See*—
Weinzettel, Michael; and Weeks, Walter, 4,353,124, Cl. 368-258.000.
Eisert, Wolfgang, to Gesellschaft fur Strahlen-und Umweltforschung mbh, Munchen. Apparatus for measuring particle characteristics. 4,352,558, Cl. 356-39.000.
Electrotech Instruments Limited: *See*—
Billings, Keith H., 4,353,113, Cl. 363-21.000.
Eliasson, Erik. Loose leaf binder. 4,352,582, Cl. 402-38.000.
El-Kafrawy, Adel: *See*—
Turbak, Albin F.; El-Kafrawy, Adel; Snyder, Fred W., Jr.; and Auerbach, Andrew B., 4,352,770, Cl. 264-187.000.
Ellis, Richard D. Search and warning light system. 4,353,110, Cl. 362-35.000.
Emerson Electric Co.: *See*—
Lombard, Marco H., 4,352,243, Cl. 30-276.000.
Emmer, Samuel. Multichannel non-discrete audio reproduction system. 4,352,953, Cl. 179-1.00G.
Endo, Tsuneo: *See*—
Saito, Yoshihiro; Sakai, Shigeru; and Endo, Tsuneo, 4,352,510, Cl. 280-727.000.
Endoh, Kenjiro; Ishizawa, Yoshiyuki; Tanaka, Masanori; and Iwasaki, Koji, to Tokyo Shibaura Denki Kabushiki Kaisha. Analog to digital converter system with an output stabilizing circuit. 4,353,060, Cl. 340-347.0AD.
Energy Absorption Systems, Inc.: *See*—
Gertz, David C.; and Denman, Owen S., 4,352,484, Cl. 256-13.100.
Energy Incorporated: *See*—
Baston, Virgil F., 4,352,332, Cl. 110-346.000.
Energy Research Corporation: *See*—
DiPasquale, Renato, 4,352,865, Cl. 429-41.000.
Maru, Hansraj C., 4,352,863, Cl. 429-17.000.
Engel, Herbert; and Hahnel, Thomas, to Messerschmitt-Bolkow-Blohm GmbH. Device for releasably securing a coupling head to an external load mounted on an aircraft. 4,352,314, Cl. 89-1.50F.
Engelbrecht & Lemmerbrock GmbH & Co.: *See*—
Julke, Bernhard, 4,352,606, Cl. 406-81.000.
English Card Clothing Company Ltd., The: *See*—
Grimshaw, Keith; and Spratt, Roger C., 4,352,224, Cl. 19-97.000.
English, Jack A., to CTS Corporation. Slide and rocker switch assemblies having double cantilevered contactor. 4,352,964, Cl. 200-5.00A.
English, Jack A.; Greve, James E.; Hufford, James N.; and Priebe, Durward H., to CTS Corporation. Slide switch. 4,352,966, Cl. 200-16.00D.
Epstein, James, to GTE Laboratories Incorporated. Fiber reinforced cathode for electrochemical cell. 4,352,768, Cl. 264-105.000.
Ernst Leitz Wetzlar GmbH: *See*—
Schmid-Schonbein, Holger; Kiesewetter, Holger; Mussler, Klaus; Myrenne, Heinz; and Scheffler, Andreas, 4,352,557, Cl. 356-39.000.
Erpenbach, Heinz; Gehrmann, Klaus; Lork, Winfried; and Pring, Peter, to Hoechst Aktiengesellschaft. Production of acetyl chloride. 4,352,761, Cl. 260-544.00A.
Errichiello, Dominic R. Binders for telephone directories and like books and tamper proof lanyard suspension thereof. 4,352,583, Cl. 402-75.000.
Esch, Johannes H. L. H., to Vitafin N.V. Combined linear and circular drive mechanism. 4,352,300, Cl. 74-89.150.
Eschen, Frank W., to Manville Service Corporation. Friction material for railroad brake shoes. 4,352,750, Cl. 523-156.000.
Espitalie, Jean; Madec, Marcel; Leplat, Paul; and Paulet, Jacques, to Institut Francais du Petrole; and Societe Labofina S.A. Method and device for determining the organic carbon content of a sample. 4,352,673, Cl. 23-230.0EP.
ETA A.G. Ebauches-Fabrik: *See*—
Hauert, Ulrich, 4,352,246, Cl. 33-174.00L.
Etablissements A. Voisin: *See*—
Le Bozec, Alain, 4,352,389, Cl. 164-343.000.
Etschenberg, Eugen: *See*—
Renson, Marcel; Etschenberg, Eugen; and Winkelmann, Johannes, 4,352,799, Cl. 424-244.000.
Evans, G. Glenn: *See*—
Trudel, Murray L.; Lockwood, George C.; and Evans, G. Glenn, 4,353,083, Cl. 357-23.000.
Evans, Wilbur F.: *See*—
Fritz, Charles D.; Evans, Wilbur F.; and Cooke, Anson R., 4,352,689, Cl. 71-86.000.
Every, Richard L.; Lewandowski, Franklin D.; and Lech, Jerome F., to Dearborn Chemical Company. Method to lower fly-ash resistivity. 4,352,747, Cl. 252-500.000.
Ewan, George B.: *See*—
Phillipps, Gordon H.; Humber, David C.; Ewan, George B.; and Coomber, Barry A., 4,352,798, Cl. 424-242.000.
Ewing, James P. Wood burning heater. 4,352,454, Cl. 237-8.00R.
Exxon Research & Engineering Co.: *See*—
Patton, Tad L., 4,352,905, Cl. 524-359.000.
Ezis, Andre: *See*—
Samanta, Shyam K.; Subramanian, Krishnamoorthy; Ezis, Andre; and Moskowitz, David, 4,352,308, Cl. 82-1.00C.
Faddegon, Hans, to U.S. Philips Corporation. Measuring circuit for integrating electrical signals in a gamma camera. 4,353,028, Cl. 324-111.000.
Fahmy, Mohamed A., to Rhone-Poulenc Agrochimie. Process for the production of s-tertiaryalkyl phosphonodithoic halides. 4,352,762, Cl. 260-972.000.
Fahrenschon, Anthony. Selectively engageable and disengageable drive for wheeled devices such as grain augers or the like. 4,352,406, Cl. 180-308.000.
Fairchild Camera and Instrument: *See*—
Pierce, John M., 4,352,239, Cl. 29-590.000.
Fairchild Camera & Instrument Corp.: *See*—
Smith, Ronald A., 4,352,492, Cl. 273-1.0GC.
Fairchild Industries, Inc.: *See*—
Bernstein, Robert G.; and Clunies, David A., 4,353,071, Cl. 343-709.000.
Fairfield Industries, Inc.: *See*—
Ray, Clifford H.; and Moore, Neil A., 4,353,121, Cl. 367-21.000.
Fallier, Charles N., Jr.; and Proud, Joseph M., to GTE Laboratories Incorporated. Pulse injection starting for high intensity discharge metal halide lamps. 4,353,012, Cl. 315-289.000.
Fara, John: *See*—
Zaffaroni, Alejandro; and Fara, John, 4,352,791, Cl. 424-153.000.
Felder, Ernst; and Pitre, Davide, to Bracco Industria Chimica S.p.A. Derivatives of 2,4,6-triiodo-isophthalic acid, processes for their synthesis and X-ray contrasting materials containing these. 4,352,788, Cl. 424-5.000.
Feldkamper, Richard; and Achelpohl, Fritz, to Windmoller & Holscher. Apparatus for the uninterrupted withdrawal of webs from reels of webs which are to be unwound successively. 4,352,468, Cl. 242-58.400.
Felix Schoeller, Jr. GmbH & Co. KG: *See*—
von Meer, Walter; Jensen, Uwe; and Anthonsen, Reiner, 4,352,861, Cl. 428-511.000.
Fell, David A.: *See*—
Maxwell, Dorothy; and Fell, David A., 4,352,901, Cl. 524-38.000.
Fernandez, Emilio A. Method for calibrating beam emitter type speed sensor for railroad rolling stock. 4,353,068, Cl. 343-17.700.
Ferro Corporation: *See*—
Barda, Henry J.; and Gray, Sandra L., 4,352,909, Cl. 525-157.000.
Votava, Werner F., 4,352,890, Cl. 501-141.000.
Ferroti, Michael: *See*—
Cherukuri, Subraman R.; Friello, Dominick R.; Ferroti, Michael; Jewell, Walter; and D'Amelia, Ronald P., 4,352,822, Cl. 426-4.000.
Fery, Jean J., to Compagnie Francaise des Petroles. Method of tracing a well drilling mud. 4,352,674, Cl. 23-230.0EP.
Fetty, Rosabelle M.: *See*—
Fetty, Warren N.; and Fetty, Rosabelle M., 4,352,329, Cl. 104-305.000.
Fetty, Warren N.; and Fetty, Rosabelle M. Toy roadway system. 4,352,329, Cl. 104-305.000.
Fiat Auto S.p.A.: *See*—
Iacoponi, Stefano, 4,352,483, Cl. 251-229.000.
Fiatron Systems, Inc.: *See*—
Schick, Karl G., 4,352,780, Cl. 422-67.000.
Fieldcrest Mills, Inc.: *See*—
Owen, James G.; and Grimes, John M., 4,352,380, Cl. 139-426.00R.
Firster Corporation Limited: *See*—
Orima, Hajime, 4,352,514, Cl. 293-110.000.
Firth, Francis G., to Applied Plastics Co., Inc. Vibratory treatment apparatus and method. 4,352,570, Cl. 366-127.000.
Fisher, Ernest P., Jr., to Otis Engineering Corporation. Velocity operated standing valve. 4,352,366, Cl. 137-71.000.
Fives-Cail Babcock: *See*—
Journet, Gerard, 4,352,451, Cl. 233-27.000.
Fleming, Henry P.; Pharr, David M.; and Thompson, Roger L., to United States of America, Agriculture. Altered brining properties of produce by a method of pre-brining exposure of the fresh produce to oxygen or carbon dioxide. 4,352,827, Cl. 426-270.000.
Fletcher Sutcliffe Wild Limited: *See*—
Foster, Malcolm C., 4,352,499, Cl. 277-59.000.
Fleury, Edward, to Versatile Cornat Corporation. Lubrication pump & filter for axle assemblies. 4,352,301, Cl. 74-467.000.
Flockenhaus, Claus; Joseph, Horst; and Meckel, Joachim, to Bergwerksverband GmbH; and Didier Engineering GmbH. Method of, and apparatus for preventing the unintended charging of coke oven chambers. 4,352,618, Cl. 414-148.000.
FMC Corporation: *See*—
Billett, Ronald J.; Anderson, David N.; and Easter, William M., 4,352,830, Cl. 426-421.000.
Kemp, David M., Jr.; and Jones, Hartl R., 4,352,682, Cl. 55-165.000.
Notardonato, Luigi; Pulawski, Casimir; and Kemp, David M., 4,352,679, Cl. 55-38.000.

Poock, Darwin N., 4,352,434, Cl. 212-186.000.
Rose, Boyd W., 4,352,249, Cl. 34-212.000.
Fondse, Pieter J.: *See—*
den Toonder, Pieter; and Fondse, Pieter J., 4,353,088, Cl. 358-120.000.
Ford Aerospace & Communications Corp.: *See—*
Bryans, Lawrence G.; and Murchison, Loren R., 4,353,041, Cl. 333-21.00A.
Ford, James A., to Kirsch Company. Rod and bracket assembly. 4,352,433, Cl. 211-105.100.
Ford Motor Company: *See—*
Bailey, Robert J., 4,352,283, Cl. 72-354.000.
Hayden, William L., 4,352,586, Cl. 403-163.000.
Samanta, Shyam K.; Subramanian, Krishnamoorthy; Ezis, Andre; and Moskowitz, David, 4,352,308, Cl. 82-1.00C.
Stinson, Jonathan D., 4,352,417, Cl. 188-322.150.
Vallance, James K., 4,352,638, Cl. 417-64.000.
Forskningsgruppe for Sjeldne Jordarter: *See—*
Gjelsvik, Norvald, 4,352,574, Cl. 366-194.000.
Forward, Robert L., to Hughes Aircraft Company. Apparatus and method for electronic damping of resonances. 4,352,481, Cl. 248-550.000.
Forward, Robert L.; and Thurmond, Gary D., to Hughes Aircraft Company. Photodiode circuit using a low noise artificial load resistor. 4,352,982, Cl. 250-214.00A.
Foseco Trading AG: *See—*
Duvall, Paul F., 4,352,482, Cl. 249-106.000.
Foster, Edwin E.; and Foster, Thomas E., to Ladney, Michael, Jr. Wheel cover with torque resistor. 4,352,525, Cl. 301-37.0PB.
Foster, Malcolm C., to Fletcher Sutcliffe Wild Limited. Hydraulic pump with piston scaling. 4,352,499, Cl. 277-59.000.
Foster, Thomas E.: *See—*
Foster, Edwin E.; and Foster, Thomas E., 4,352,525, Cl. 301-37.0PB.
Fotozines, Inc.: *See—*
Dobbs, Gregg; and Dobbs, Laura P., 4,352,555, Cl. 355-77.000.
Fountain, Cecil D. Climbing safety device. 4,352,409, Cl. 182-8.000.
Fowler, Albert L.: *See—*
Pelczyk, Alan; Purssell, Robert F.; Woollard, Alfred J.; Fowler, Albert L.; Walker, David M.; Henderson, Alan G.; and Stevenson, Alastair K., 4,353,050, Cl. 336-30.000.
Fowler, Charles E., to General Motors Corporation. Low profile connector for printed circuit board. 4,352,538, Cl. 339-126.00R.
Francis, Jimmie L.: *See—*
Stuller, Howard E.; and Francis, Jimmie L., 4,352,608, Cl. 406-116.000.
Francis & Lusky Company, Inc.: *See—*
Wallo, William H., 4,352,630, Cl. 416-70.00A.
Frank, Robert H.: *See—*
Smith, Richard W.; and Frank, Robert H., 4,352,259, Cl. 52-2.000.
Frank, Robert I.: *See—*
Kaplow, Roy; Frank, Robert I.; and Goodrich, Joel, 4,352,948, Cl. 136-249.000.
Fransen, Nico V., deceased; and by de Haan, Friedrich J., administrator, to U.S. Philips Corporation. Artificial reverberation apparatus for audio frequency signals. 4,352,954, Cl. 179-1.00J.
French, Douglas A.: *See—*
French, Frederic A.; and French, Douglas A., 4,352,787, Cl. 423-445.000.
French, Frederic A.; and French, Douglas A., to TDC-Technology Development Corp. Ultra-hard particles of carbon produced by reacting metal carbide with non-metal halide in hot melt system. 4,352,787, Cl. 423-445.000.
Friedman, Robert H., to Getty Oil Company. Method for selective plugging using resin emulsions. 4,352,396, Cl. 166-295.000.
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Fritz, Charles D.; Evans, Wilbur F.; and Cooke, Anson R., to Union Carbide Corporation. Method for controlling apical dominance. 4,352,689, Cl. 71-86.000.
Frog, Switch & Manufacturing Company, The: *See—*
Hornberger, Michael E., 4,352,774, Cl. 264-263.000.
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Osano, Hisashi; and Morozumi, Takuro, 4,352,347, Cl. 123-440.000.
Fuji Photo Film Co., Ltd.: *See—*
Hara, Yoshio, 4,352,879, Cl. 430-209.000.
Ohara, Yuji, 4,352,984, Cl. 250-234.000.
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Kohzai, Yoshinori; and Fujioka, Yoshiki, 4,353,018, Cl. 318-571.000.
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Inaba, Hajimu; Nakajima, Seiichiro; and Inagaki, Shigemi, 4,352,620, Cl. 414-225.000.
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Fujitsu Limited: *See—*
Iijima, Nobuo, 4,352,643, Cl. 417-313.000.
Murase, Teruo; Kawano, Kyoichiro; and Oshitani, Akiyoshi, 4,352,533, Cl. 339-17.00L.
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Sakurai, Junji, 4,353,085, Cl. 357-42.000.
Sugishima, Kenji; and Takada, Tadakazu, 4,352,724, Cl. 204-192.00E.
Fukai, Kikuji; and Shirouchi, Hideo, to Taiyo Yuden Co., Ltd. Apparatus for transporting electronic components or the like from one location to another in alignment. 4,352,440, Cl. 221-178.000.
Fukui, Tomonori; and Eguchi, Osamu, to Nippondenso Co., Ltd. Electronic control method and apparatus for automobile air conditioning system with air purifier. 4,352,321, Cl. 98-2.110.
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Nakamura, Hideo; Funabashi, Tsuneo; and Koizumi, Haruo, 4,353,030, Cl. 328-38.000.
Funai Electric Co., Ltd.: *See—*
Kawai, Tsutomu, 4,353,101, Cl. 360-85.000.
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Seragnoli, Enzo, 4,352,264, Cl. 53-531.000.
G. Leblanc Corporation: *See—*
Pascucci, Vito S.; and Aiello, Elmer J., 4,352,428, Cl. 206-314.000.
Gaches, Philippe: *See—*
Menard, Christian; and Gaches, Philippe, 4,352,345, Cl. 123-414.000.
Gallitzendorfer, Josef; Cardiet, Gerard; and Tomforde, Johann, to Daimler-Benz Aktiengesellschaft. Motor vehicle with a rearward swing-up body member. 4,353,111, Cl. 362-80.000.
Galpin, Robert K., to Plessey Overseas Limited. Zero-crossing comparators with threshold validation. 4,352,999, Cl. 307-354.000.
Galvin, Thomas J.: *See—*
Reed, Weldon N.; and Galvin, Thomas J., 4,352,906, Cl. 524-426.000.
Gambro AB: *See—*
Nylen, Ulf T. G., 4,352,374, Cl. 137-564.500.
Garey, Carroll L.: *See—*
Krinski, Thomas L.; and Garey, Carroll L., 4,352,692, Cl. 106-79.000.
Garner, Marvin A.: *See—*
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Garrett Corporation, The: *See—*
Kinsell, Robert C.; Saba, Michael P.; and Strang, James E., 4,352,273, Cl. 62-87.000.
Garrett, Morine V.: *See—*
Garrett, Vern L.; and Garrett, Morine V., 4,352,477, Cl. 248-156.000.
Garrett, Vern L.; and Garrett, Morine V. Support for holding brushes. 4,352,477, Cl. 248-156.000.
Gartside, Robert J.; and Woebcke, Herman N., to Stone & Webster Engineering Corporation. Solids feeding device and system. 4,352,728, Cl. 208-127.000.
Gasper, John S., to North American Van Lines, Inc. Spreader bar. 4,352,516, Cl. 294-81.00R.
Gathright, Wayne R. (PF-2) Double guitar stand. 4,352,480, Cl. 248-443.000.
Gaulin Corporation: *See—*
Pandolfe, William D., 4,352,573, Cl. 366-176.000.
Gay, Walter A.: *See—*
Katz, Lawrence E.; and Gay, Walter A., 4,352,806, Cl. 424-251.000.
Gaylord, Norman G.: *See—*
Young, Robert W.; Prussin, Samuel; and Gaylord, Norman G., 4,352,833, Cl. 427-4.000.
GCA Corporation: *See—*
Loveless, W. L.; Trott, Richard J.; Heath, Robert H.; and Glick, William L., 4,352,607, Cl. 406-88.000.
Gehrke, James K.: *See—*
Rose, Richard A.; Gehrke, James K.; Goedken, Terrance J.; and Vilmur, Roger, 4,353,038, Cl. 331-36.00C.
Gehrmann, Klaus: *See—*
Erpenbach, Heinz; Gehrmann, Klaus; Lork, Winfried; and Pring, Peter, 4,352,761, Cl. 260-544.00A.
Geiger, John H., Jr, John H.: *See—*
Boden, Richard M.; and Geiger, John H., Jr, John H., 4,352,743, Cl. 252-174.110.
General Atomic Company: *See—*
Ohkawa, Tihiro, 4,352,722, Cl. 204-129.000.
General Electric Company: *See—*
Dietz, Peter W., 4,352,681, Cl. 55-127.000.

Dinwiddie, Kendall L.; Racz, Janos A.; and Seppi, Edward J., 4,352,530, Cl. 339-5.00M.
Olson, Daniel R.; Griffing, Bruce F.; and Norton, James F., 4,352,839, Cl. 427-240.000.
Rodenbeck, Philip G., 4,352,305, Cl. 84-9.510.
Weber, Vincent H., 4,353,109, Cl. 362-13.000.

General Foods Corporation: *See—*
Wood, Robert W.; Parnell, John V.; and Hoefler, Andrew C., 4,352,832, Cl. 426-589.000.

General Motors Corporation: *See—*
Edwards, Ralph W., 4,353,075, Cl. 343-903.000.
Fowler, Charles E., 4,352,538, Cl. 339-126.00R.
McNamee, James W., Sr.; and Kosareo, Daniel N., 4,352,535, Cl. 339-75.0MP.
Warner, Laurence A., 4,352,304, Cl. 74-498.000.
Wendler, Paul O.; and Dzioba, Donald L., 4,352,296, Cl. 74-55.000.
Yueh, Chang L., 4,353,131, Cl. 455-179.000.

General Signal Corp.: *See—*
Smith, Barry L.; and Hoelscher, James R., 4,352,475, Cl. 246-34.0CT.
Weisenbach, Charles O., 4,352,637, Cl. 417-54.000.

Georgiades, Gregory, to Westvaco Corporation. Converting machine gum box. 4,352,670, Cl. 493-337.000.

Gertz, David C.; and Denman, Owen S., to Energy Absorption Systems, Inc. Shear action and compression energy absorber. 4,352,484, Cl. 256-13.100.

Geschka, Hugo-Werner, to E. Blum GmbH & Co. Iron core with planished clamping surfaces for electric machine, such as transformer, choke, voltage stabilizer or the like. 4,353,052, Cl. 336-210.000.

Gesellschaft fur Strahlen-und Umweltforschung mbh, Munchen: *See—*
Eisert, Wolfgang, 4,352,558, Cl. 356-39.000.

Gessner, Dieter: *See—*
Ott, Lothar; and Gessner, Dieter, 4,352,653, Cl. 425-541.000.

Getty Oil Company: *See—*
Friedman, Robert H., 4,352,396, Cl. 166-295.000.

Ghosh, Amit K., to Rockwell International Corporation. Compression forming of sheet material. 4,352,280, Cl. 72-38.000.

Giacomelli, Peter: *See—*
Olsson, Alvar; and Giacomelli, Peter, 4,352,421, Cl. 198-392.000.

Gipiemme s.r.l.: *See—*
Pianalto, Adriano, 4,352,504, Cl. 280-281.00R.

Gist, Adolphus V.: *See—*
Whiteside, Ross C., Jr.; Gist, Adolphus V.; and Doorakian, George A., 4,352,918, Cl. 528-89.000.

Givaudan Corporation: *See—*
Kaiser, Roman; and Lamparsky, Dietmar, 4,352,943, Cl. 568-378.000.

Gjelsvik, Norvald, to Forskningsgruppe for Sjeldne Jordarter. Mixer-settler apparatus. 4,352,574, Cl. 366-194.000.

Glaenzer Spicer: *See—*
Guimbretiere, Pierre L., 4,352,528, Cl. 308-189.00R.

Glaxo Group Limited: *See—*
Phillipps, Gordon H.; Humber, David C.; Ewan, George B.; and Coomber, Barry A., 4,352,798, Cl. 424-242.000.

Gleason, John G.; Kinzig, Charles M.; and Bryan, Deborah L., to SmithKline Beckman Corporation. Process for the preparation of esters of leukotriene A. 4,352,757, Cl. 549-513.000.

Glick, William L.: *See—*
Loveless, W. L.; Trott, Richard J.; Heath, Robert H.; and Glick, William L., 4,352,607, Cl. 406-88.000.

Godding, Ronald G.; and McCormack, William, to BCIRA. Means for adding materials to a flowing stream. 4,352,605, Cl. 406-29.000.

Goedken, Terrance J.: *See—*
Rose, Richard A.; Gehrke, James K.; Goedken, Terrance J.; and Vilmur, Roger, 4,353,038, Cl. 331-36.00C.

Goellnitz, Heinz: *See—*
Leibhard, Erich; Richter, Hanno; Lang, Gusztav; Popp, Franz; and Goellnitz, Heinz, 4,352,442, Cl. 222-146.0HE.

Gokey, Phillip E.; Hurlbut, Donovan W.; Sederholm, Emma L.; Terry, Angel F.; and Jewer, Alan A., to News Log International, Inc. Optical floppy disc data storage and retrieval techniques. 4,353,077, Cl. 346-137.000.

Goldberg, Gerald J., to Harris Data Communications, Inc. Printed circuit board connecting and locking assembly. 4,352,536, Cl. 339-75.0MP.

Goldmann, Wolf: *See—*
Steiner, Janos; Wenzly, Kalman; Toth, Jozsef T.; Tiggesbaumker, Peter; Goldmann, Wolf; and Butschko, Gerhard, 4,352,660, Cl. 432-14.000.

Goldraikh, Genrikh M.; Dubinenko, Askold F.; Kapitelman, Leonid V.; Krivak, Viktor A.; Livshits, Viktor Y.; Manenkov, Konstantin M.; Khonutov, Semen M.; and Khomchenko, Eduard N. Double-ended multiple-spindle fine boring machine. 4,352,611, Cl. 408-37.000.

Goldsmith, Riley G., to Conoco Inc. Permanent mooring of tension leg platforms. 4,352,599, Cl. 405-224.000.

Goodrich, Joel: *See—*
Kaplow, Roy; Frank, Robert I.; and Goodrich, Joel, 4,352,948, Cl. 136-249.000.

Goodyear Aerospace Corporation: *See—*
Uram, John R., Jr., 4,352,848, Cl. 428-192.000.

Goodyear Tire & Rubber Company, The: *See—*
Dunn, William F.; and Milan, Ernest A., 4,352,467, Cl. 242-55.000.

Gorgone, Robert L.; Kovach, Alan J.; and Novak, Frank A., to Ardac, Inc. Logarithmic primary testing system for security validation. 4,352,559, Cl. 356-71.000.

Gorshe, Thomas M.: *See—*
Meyers, George L.; and Gorshe, Thomas M., 4,352,422, Cl. 198-404.000.

Gossard, Arthur C.: *See—*
Allyn, Christopher L.; Gossard, Arthur C.; and Wiegmann, William, 4,353,081, Cl. 357-16.000.

Gould Inc.: *See—*
Shtarkman, Emile M., 4,352,487, Cl. 267-35.000.

Grader, Ronald J.; and Johansen, Richard P., to Linde Aktiengesellschaft. Water ozonation method. 4,352,740, Cl. 210-760.000.

Graf Felix; Wirz, Armin; and Mondini, Giancarlo, to Rieter Machine Work, Ltd. Web crushing arrangement for a card web. 4,352,223, Cl. 19-65.0CR.

Grange, Arthur; and Hollings, Jack, to Lucas Industries Limited. Apparatus for homogenizing liquids. 4,352,571, Cl. 366-127.000.

Grappendorf, Richard H.; Sirrine, Gordon G.; and Davis, John S., to Christensen, Inc. Drill bit. 4,352,400, Cl. 175-330.000.

Gray, Robin T.; and De Jong, Aaldert J., to Shell Oil Company. Cyclohexane derivatives. 4,352,937, Cl. 549-546.000.

Gray, Sandra L.: *See—*
Barda, Henry J.; and Gray, Sandra L., 4,352,909, Cl. 525-157.000.

Grechanliisky, Stepan S.; Grishanov, Ivan I.; Dimitraki, Sergei N.; Miroshnichenko, Vladimir S.; and Nastas, Vitaly I. Device for manufacturing resistors from insulated wire. 4,352,465, Cl. 242-7.120.

Greene, David J.; and Walker, Peter S., to Howmedica, Inc. Joint prosthesis. 4,352,212, Cl. 3-1.910.

Greene, Tweed & Co., Inc.: *See—*
Burke, John A.; and Gross, James B., 4,352,498, Cl. 277-1.000.

Greve, James E.: *See—*
English, Jack A.; Greve, James E.; Hufford, James N.; and Priebe, Durward H., 4,352,966, Cl. 200-16.00D.

Griffing, Bruce F.: *See—*
Olson, Daniel R.; Griffing, Bruce F.; and Norton, James F., 4,352,839, Cl. 427-240.000.

Griffith, Lawrence L. Soccer ball practice machine. 4,352,348, Cl. 124-78.000.

Grim, Dale D. Permanent wave headrest attachment. 4,352,216, Cl. 4-523.000.

Grimes, John M.: *See—*
Owen, James G.; and Grimes, John M., 4,352,380, Cl. 139-426.00R.

Grimshaw, Keith; and Spratt, Roger C., to English Card Clothing Company Ltd., The. Opening roller for open-end spinning apparatus. 4,352,224, Cl. 19-97.000.

Grishanov, Ivan I.: *See—*
Grechanliisky, Stepan S.; Grishanov, Ivan I.; Dimitraki, Sergei N.; Miroshnichenko, Vladimir S.; and Nastas, Vitaly I., 4,352,465, Cl. 242-7.120.

Gross, Hansjurgen: *See—*
Moser, Gottfried; and Gross, Hansjurgen, 4,352,455, Cl. 237-12.30R.

Gross, James B.: *See—*
Burke, John A.; and Gross, James B., 4,352,498, Cl. 277-1.000.

Grossbuchbinderei Sigloch GmbH & Co. KG: *See—*
Brenner, Hermann, 4,352,616, Cl. 414-31.000.

Grube, Erwin, to Durkoppwerke GmbH. Coupling assembly for overhead rail materials-transport system. 4,352,328, Cl. 104-172.00S.

Grumman Aerospace Corporation: *See—*
Wengler, Leonard M.; Wicker, Harold J.; and Masica, Michael J., Jr., 4,352,707, Cl. 156-359.000.

Grun, Gustav, to Claudius Peters AG. Method for treating particulate material. 4,352,718, Cl. 159-48.00R.

GTE Automatic Electric Laboratories, Inc.: *See—*
Huntley, Christopher R., 4,353,039, Cl. 331-113.00R.

GTE Laboratories Incorporated: *See—*
Epstein, James, 4,352,768, Cl. 264-105.000.
Fallier, Charles N., Jr.; and Proud, Joseph M., 4,353,012, Cl. 315-289.000.
Klinedinst, Keith A.; and Murphy, Francis G., 4,352,866, Cl. 429-101.000.

GTE Products Corporation: *See—*
Knoll, William C., 4,353,009, Cl. 315-220.000.
Knoll, William C.; and Bay, David L., 4,353,010, Cl. 315-220.000.

Gudger, Keith H.: *See—*
Raymond, Joseph H., Jr.; and Gudger, Keith H., 4,352,997, Cl. 307-279.000.

Guelden, Ronald H., to Bell Telephone Laboratories, Incorporated. Cord adapter. 4,352,537, Cl. 339-99.00R.

Guibert, Raul. Automatic dough-processing apparatus. 4,352,567, Cl. 366-76.000.

Guildford, Leslie H.: *See—*
Bailey, Peter K.; and Guildford, Leslie H., 4,353,092, Cl. 358-160.000.

Guimbretiere, Pierre L., to Glaenzer Spicer. Rolling bearing having two rows of rolling elements and device for mounting a vehicle wheel. 4,352,528, Cl. 308-189.00R.

Gulf Research & Development Company: *See—*
Habib, Mohammad M.; and Pretzer, Wayne R., 4,352,947, Cl. 568-902.000.
Onopchenko, Anatoli; Sabourin, Edward T.; and Selwitz, Charles M., 4,352,942, Cl. 568-306.000.
Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., 4,352,946, Cl. 568-902.000.

Gulton Industries, Inc.: *See—*
Burkarth, Jack L., 4,352,323, Cl. 98-40.00D.

Gunther, Conrad J., to Dzus Fastener Co., Inc. Toggle latch with spring catch. 4,352,513, Cl. 292-113.000.

Gunton, David J., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Surface acoustic wave devices and systems including such devices. 4,353,043, Cl. 333-151.000.

Gustav Magenwirth GmbH & Co.: *See*—
Christner, Heinz, 4,352,303, Cl. 74-489.000.

Guthrie, Robert W.; Kierstead, Richard W.; Mennona, Francis A.; and Sullivan, Ann C., to Hoffmann-La Roche Inc. Chlorocitric acids. 4,352,758, Cl. 549-521.000.

Gutierrez Atencio, Francisco J. Hydromotive set. 4,352,989, Cl. 290-53.000.

Gutter, David H., to AMP Incorporated. Commoning element for an electrical connector. 4,352,531, Cl. 339-14.00R.

Guzman Llansa, Eduardo; Arino Maestrojuan, Pablo; and Melendez Andreu, Enrique. Process for obtaining P-acetamido phenol α-methyl-4(2'thienyl-carbonyl) phenyl acetate. 4,352,935, Cl. 549-72.000.

Gylland, E. Frederick, Jr.: *See*—
Paton, H. Neil; Gylland, E. Frederick, Jr.; Sandys, Jeffrey P.; and Skilling, John B., 4,352,509, Cl. 280-716.000.

Gyugyi, Laszlo, to Westinghouse Electric Corp. Control for VAR generator with deadband. 4,353,024, Cl. 323-211.000.

H.F. & Ph.F. Reemtsma G.m.b.H. & Co.: *See*—
Maier, Maxemin; Wittkugel, Heinz; Liepelt, Klaus J.; and Homeier, Jorn, 4,352,430, Cl. 209-577.000.

Habib, Mohammad M.; and Pretzer, Wayne R., to Gulf Research & Development Company. Process for producing ethanol. 4,352,947, Cl. 568-902.000.

Hackler, Erich, to Didier Engineering GmbH. Process and/or facility for driving off dissolved, corrosive gaseous constituents from watery solutions. 4,352,680, Cl. 55-48.000.

Haefliger, Erwin; Hinden, Fritz; and Lardelli, Aldo, to Kern & Co. AG. Reflector for electrooptical distance measurement. 4,352,556, Cl. 356-1.000.

Hahnel, Thomas: *See*—
Engel, Herbert; and Hahnel, Thomas, 4,352,314, Cl. 89-1.50F.

Hall, Peter M.; Howland, Frank L.; Morabito, Joseph M.; and Rickabaugh, Lawrence J., to Bell Telephone Laboratories, Incorporated. Fabrication of circuit packages. 4,352,449, Cl. 228-123.000.

Hamilton, Relmond H.: *See*—
DeMaria, Francesco, 4,352,852, Cl. 428-290.000.

Hammer, Thomas; Hehn, Wilfried; Kocourek, Franz; Sieber, Werner; and Osegowitsch, Viktor, to AGFA-Gevaert Aktiengesellschaft. Apparatus for drying sheet-like photographic material. 4,352,448, Cl. 226-108.000.

Hammett, Dillard S., to Sedco, Inc. Stab system for equipment removal. 4,352,596, Cl. 405-195.000.

Hanatsuka, Mitsuo: *See*—
Hiranuma, Hidetoshi; Sekiya, Tetsuo; Mizogami, Susumu; Mori, Motokuni; Hanatsuka, Mitsuo; and Kanayama, Toshiji, 4,352,928, Cl. 542-431.000.

Handel, Peter H.; Jungman, James A.; and Honickman, Stephen N. Absorptive coating for the reduction of the reflective cross section of metallic surfaces and control capabilities therefor. 4,353,069, Cl. 343-18.00A.

Hanji, Katsumi: *See*—
Mashita, Kentaro; and Hanji, Katsumi, 4,352,915, Cl. 526-65.000.

Hannas, James R., to Silent Running Corporation. Multiple position power switch. 4,352,993, Cl. 307-112.000.

Hansel, Otto; Lesch, Hans; and Lesch, Hans-Bernd, to Otto Hansel GmbH. Apparatus for producing bar packages of preferably individually wrapped sweets or similar pieces of confectionery. 4,352,265, Cl. 53-541.000.

Hany & Cie AG: *See*—
Heimgartner, Hans; and Wirz, Karl, 4,353,118, Cl. 364-510.000.

Hara, Yoshio, to Fuji Photo Film Co., Ltd. Self-processing type photographic film unit with a trap member having gas discharging means. 4,352,879, Cl. 430-209.000.

Harada, Fumio: *See*—
Murayama, Akira; Harada, Fumio; and Suefuji, Kazutaka, 4,352,642, Cl. 417-312.000.

Harada, Kunio: *See*—
Mizutani, Tatsumi; Kanai, Norio; Harada, Kunio; Komatsu, Hideo; and Iida, Shinya, 4,352,974, Cl. 219-121.0PD.

Haraguchi, Youichiro: *See*—
Urai, Muneharu; Abe, Tadafumi; Haraguchi, Youichiro; and Hayashi, Koji, 4,352,709, Cl. 156-380.600.

Hrrbert, Charles A.: *See*—
Welch, Willard M.; and Harbert, Charles A., 4,352,807, Cl. 424-256.000.

Hardigg Industries, Inc.: *See*—
Hardigg, James S.; Strzegowski, Joseph C., Jr.; Burgess, Asial L., Jr.; and Neal, David B., 4,352,977, Cl. 219-243.000.

Hardigg, James S.; Strzegowski, Joseph C., Jr.; Burgess, Asial L., Jr.; and Neal, David B., to Hardigg Industries, Inc. Welding apparatus and method. 4,352,977, Cl. 219-243.000.

Hardin, George T., to Robertshaw Controls Company. Manifolding means for electrical and/or pneumatic control units and parts and methods therefor. 4,352,532, Cl. 339-15.000.

Hardt, Jean; and Widrig, Jakob, to Swiss Aluminium Ltd. Device for conducting away the exhaust gases from internal combustion engines. 4,352,408, Cl. 181-249.000.

Harnischfeger Corporation: *See*—
Wieschel, John E., 4,352,622, Cl. 414-277.000.

Harris Data Communications, Inc.: *See*—
Goldberg, Gerald J., 4,352,536, Cl. 339-75.0MP.

Hartley, Nicholas E. W.; Wilcockson, Alan; Sutherland, David M., deceased; and by Midland Bank Trust Company Limited, legal representative, The, to United Kingdom Atomic Energy Authority. Method of improving the wear resistance of metals. 4,352,698, Cl. 148-4.000.

Hartmann, Clinton S., to R F Monolithics, Inc. Surface acoustic wave device with reflectors. 4,353,046, Cl. 333-194.000.

Harvatin, Louis J.: *See*—
Anderson, Arthur I.; and Harvatin, Louis J., 4,352,331, Cl. 105-248.000.

Hasegawa, Shinichi; Ueda, Yuji; and Tomita, Hiroshige, to Sumitomo Chemical Company, Limited. Process for purification of phenylhydrazine. 4,352,941, Cl. 564-314.000.

Hashimoto, Kazuo: *See*—
Kumasaka, Sadao; Tada, Satomi; Yoneyama, Goro; and Hashimoto, Kazuo, 4,352,651, Cl. 425-261.000.

Hatakeyama, Noboru, to Konishiroku Photo Industry Co., Ltd. Deflecting device for sorter or the like. 4,352,490, Cl. 271-289.000.

Hatashita, Hiroshi: *See*—
Saitoh, Takeshi; Nagashima, Toshio; Hatashita, Hiroshi; and Yamamoto, Susumu, 4,353,132, Cl. 455-315.000.

Hatfield, Raymond W.: *See*—
Ladney, Michael, Jr.; and Hatfield, Raymond W., 4,352,767, Cl. 264-46.600.

Hauert, Ulrich, to ETA A.G. Ebauches-Fabrik. Tracer head for machine tools. 4,352,246, Cl. 33-174.00L.

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Hayden, William L., to Ford Motor Company. Linkage system. 4,352,586, Cl. 403-163.000.

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Hehn, Wilfried: *See*—
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Heilmann, Steven M.: *See*—
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Helioset Advanced Technologies Ltd.: *See*—
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Pelczyk, Alan; Purssell, Robert F.; Woollard, Alfred J.; Fowler, Albert L.; Walker, David M.; Henderson, Alan G.; and Stevenson, Alastair K., 4,353,050, Cl. 336-30.000.

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Herbst, Heiner; and Niemeyer, Matthias, to Siemens Aktiengesellschaft. Readout circuit for a monolithically integrated circuit for linear image scanning. 4,353,084, Cl. 357-30.000.

Hercules Incorporated: *See*—
Breslow, David S., 4,352,938, Cl. 549-553.000.
Landoll, Leo M., 4,352,916, Cl. 526-200.000.
Zeigler, Edward H., Jr., 4,352,699, Cl. 149-109.600.

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Hibbard, William M., to His Way. Gold and silver separator. 4,352,733, Cl. 209-430.000.

Hieble, Jacob P.: *See*—
Bondinell, William E.; DeMarinis, Robert M.; Hieble, Jacob P.; and Pendleton, Robert G., 4,352,809, Cl. 424-258.000.

Higgins, Raymond; Hutchings, Graham J.; Trebilco, Deborah A.; and Starkey, Philip E., to Imperial Chemical Industries Limited. Production of maleic anhydride. 4,352,755, Cl. 549-258.000.

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Crookston, James A.; and Hill, James L., 4,352,661, Cl. 432-14.000.

Hilterhaus, Karl-Heinz, to Chemie-Anlagenbau Bischofsheim GmbH. Process and device for the continuous production of plates from foamed synthetic resins. 4,352,895, Cl. 521-99.000.

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Leibhard, Erich; Richter, Hanno; Lang, Gusztav; Popp, Franz; and Goellnitz, Heinz, 4,352,442, Cl. 222-146.0HE.

Hilton, Carl W., to Toolmakers, Incorporated. Powdered metal press and tooling therefor. 4,352,648, Cl. 425-78.000.

Hinden, Fritz: *See*—
Haefliger, Erwin; Hinden, Fritz; and Lardelli, Aldo, 4,352,556, Cl. 356-1.000.

Hirabayashi, Yuji, to Nissan Motor Co., Ltd. Steam feeding apparatus for a multicylinder steam engine. 4,352,271, Cl. 60-670.000.

Hirahara, Shuzo, to Tokyo Shibaura Denki Kabushiki Kaisha. Quality control copying apparatus. 4,352,553, Cl. 355-14.00E.

Hiraishi, Shigetoshi; Morishita, Sadao; and Matsushita, Toshihiko, to Mitsubishi Paper Mills, Ltd. Transfer-onto-plain paper type pressure-sensitive copying paper. 4,352,855, Cl. 428-320.400.

Hiranuma, Hidetoshi; Sekiya, Tetsuo; Mizogami, Susumu; Mori, Motokuni; Hanatsuka, Mitsuo; and Kanayama, Toshiji, to Mitsubishi Yuka Pharmaceutical Co., Ltd. 5,6-Alkylenepyrimidine derivative. 4,352,928, Cl. 542-431.000.

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Ogata, Masatsugu; Takasaki, Hirokazu; Nemoto, Masanori; Narahara, Toshikazu; Hironaka, Kenichi; and Ishikawa, Tetuo, 4,352,897, Cl. 523-220.000.

Hiroshi Teramachi: *See*—
Imai, Katsuhito, 4,352,526, Cl. 308-6.00C.

Hirsch, Herbert L., to Microdot Inc. Tamper resistant threaded fastener. 4,352,614, Cl. 411-427.000.

His Way: *See*—
Hibbard, William M., 4,352,733, Cl. 209-430.000.

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Kono, Hisashi; Terai, Kenji; Hisadomi, Masaki; Uemura, Katumi; Ohta, Sumio; and Yamamoto, Yoshiichi, 4,352,923, Cl. 528-233.000.

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Kobayashi, Hideaki; Tamuro, Yasuharu; Yasuhara, Takashi; and Ishii, Kunio, 4,353,002, Cl. 310-64.000.
Kumada, Akio; and Nakamura, Shigeo, 4,352,961, Cl. 179-110.00A.
Kurihara, Nobuo; Nishikawa, Mitsuyo; Nagahashi, Yoshitoshi; and Takechi, Masafumi, 4,352,293, Cl. 73-593.000.
Miura, Kiyoshi; Watanabe, Naomitsu; and Tomita, Yoshifumi, 4,352,878, Cl. 430-167.000.
Mizutani, Tatsumi; Kanai, Norio; Harada, Kunio; Komatsu, Hideo; and Iida, Shinya, 4,352,974, Cl. 219-121.0PD.
Murayama, Akira; Harada, Fumio; and Suefuji, Kazutaka, 4,352,642, Cl. 417-312.000.
Nakamura, Hideo; Funabashi, Tsuneo; and Koizumi, Haruo, 4,353,030, Cl. 328-38.000.
Noda, Masaru, 4,353,000, Cl. 307-490.000.
Ogata, Masatsugu; Takasaki, Hirokazu; Nemoto, Masanori; Narahara, Toshikazu; Hironaka, Kenichi; and Ishikawa, Tetuo, 4,352,897, Cl. 523-220.000.
Oyamada, Tugio; Suzuki, Kenichi; Kishi, Toshikazu; and Shibato, Eizo, 4,352,975, Cl. 219-125.110.
Saitoh, Takeshi; Nagashima, Toshio; Hatashita, Hiroshi; and Yamamoto, Susumu, 4,353,132, Cl. 455-315.000.
Sugiyama, Toshio; and Maeda, Takeshi, 4,352,981, Cl. 250-201.000.
Suzuki, Shigeo; Kakuta, Atsushi; Oka, Hiroyuki; Mori, Yasuki; and Morishita, Hirosada, 4,352,876, Cl. 430-58.000.
Tohyama, Shigeo; Akitomo, Nobuo; and Nemoto, Isao, 4,352,561, Cl. 356-332.000.
Yoshida, Kazutoshi; Yano, Ryuji; and Ishida, Kazuhiro, 4,352,995, Cl. 307-265.000.

Hixenbaugh, Dennis L., to Pennsylvania Engineering Corp. Pressure probe for metallurgical vessels. 4,352,486, Cl. 266-99.000.

Hoath, Grantley R.: *See*—
Carascon, Walter; Dyett, Derek H.; and Hoath, Grantley R., 4,352,604, Cl. 406-28.000.

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Erpenbach, Heinz; Gehrmann, Klaus; Lork, Winfried; and Pring, Peter, 4,352,761, Cl. 260-544.00A.

Hoechst-Roussel Pharmaceuticals Inc.: *See*—
Strupczewski, Joseph T.; and Allen, Richard C., 4,352,811, Cl. 424-267.000.

Hoefler, Andrew C.: *See*—
Wood, Robert W.; Parnell, John V.; and Hoefler, Andrew C., 4,352,832, Cl. 426-589.000.

Hoelscher, James R.: *See*—
Smith, Barry L.; and Hoelscher, James R., 4,352,475, Cl. 246-34.0CT.

Hoffman, Richard E., to United States of America, Army. Cure rate inhibitors for ferrocene-containing propellants. 4,352,700, Cl. 149-19.200.

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Guthrie, Robert W.; Kierstead, Richard W.; Mennona, Francis A.; and Sullivan, Ann C., 4,352,758, Cl. 549-521.000.
Hunkeler, Walter; and Kyburz, Emilio, 4,352,815, Cl. 424-273.00R.
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Ishitsuka, Hideo; Shirai, Haruyoshi; Umeda, Isao; and Suhara, Yasuji, 4,352,792, Cl. 424-180.000.
Liu, Chao-Min; Tresner, Homer D.; and Westley, John, 4,352,934, Cl. 548-217.000.

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Dijkhuis, Jacob I., 4,352,730, Cl. 209-8.000.

Hollet, Ronald J.: *See*—
Orsino, Joseph A.; Sawyer, Ernest R.; and Hollet, Ronald J., 4,352,364, Cl. 137-43.000.

Hollings, Jack: *See*—
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Holobaugh, Raymond E., Jr., to Mohasco Corp. Manually-operated spring-assisted reclining chairs. 4,352,523, Cl. 297-85.000.

Homeier, Jorn: *See*—
Maier, Maxemin; Wittkugel, Heinz; Liepelt, Klaus J.; and Homeier, Jorn, 4,352,430, Cl. 209-577.000.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Takamatsu, Hiroshi; Tanaka, Hiroshi; and Sugisaki, Mutuo, 4,352,640, Cl. 417-273.000.

Honeywell Inc.: *See*—
Stamm, Thomas A., 4,353,064, Cl. 340-825.310.

Honickman, Stephen N.: *See*—
Handel, Peter H.; Jungman, James A.; and Honickman, Stephen N., 4,353,069, Cl. 343-18.00A.

Hoover Company, The: *See*—
Buchtel, Dean H., 4,352,967, Cl. 200-153.00J.

Hoover, Merle V., to RCA Corporation. Field effect transistor amplifier with variable gain control. 4,353,036, Cl. 330-264.000.

Hopkins, David A., to Valeron Corporation, The. Face milling cutter. 4,352,609, Cl. 407-42.000.

Hoppe, Karl-Heinz, to Robert Bosch GmbH. Circuit for detecting faults in horizontal sync pulse signals. 4,353,091, Cl. 358-139.000.

Hori, Fumihisa; Tamukai, Tadao; and Miyajima, Mikio, to Alps Patent Department. Serial printer having a single drive motor. 4,352,576, Cl. 400-154.400.

Hormann, Rudolf: *See*—
Stiglmaier, Manfred; and Hormann, Rudolf, 4,352,520, Cl. 296-182.000.

Hornady Manufacturing Company: *See*—
Schreiber, Charles J., 4,352,225, Cl. 29-1.230.

Hornberger, Michael E., to Frog, Switch & Manufacturing Company, The. Method and arrangement for support of contact elements of hammermills and the like. 4,352,774, Cl. 264-263.000.

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Hayashi, Kazuo; and Hotta, Mitsuhiko, 4,352,987, Cl. 378-150.000.

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Hall, Peter M.; Howland, Frank L.; Morabito, Joseph M.; and Rickabaugh, Lawrence J., 4,352,449, Cl. 228-123.000.

Howmedica, Inc.: *See*—
Greene, David J.; and Walker, Peter S., 4,352,212, Cl. 3-1.910.

Hu, Evelyn L.: *See*—
Howard, Richard E.; Hu, Evelyn L.; and Jackel, Lawrence D., 4,352,870, Cl. 430-271.000.

Huber, William E.: *See*—
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Hubscher Ribbon Corporation Limited: *See*—
Perron, Reginald F., 4,352,703, Cl. 156-88.000.

Huck, William V., to Minnesota Mining and Manufacturing Company. Spool for photographic film. 4,352,469, Cl. 242-71.800.

Hufford, James N.: *See*—
English, Jack A.; Greve, James E.; Hufford, James N.; and Priebe, Durward H., 4,352,966, Cl. 200-16.00D.

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Forward, Robert L., 4,352,481, Cl. 248-550.000.
Forward, Robert L.; and Thurmond, Gary D., 4,352,982, Cl. 250-214.00A.

Humanicare International Inc.: *See*—
Tong, David P., 4,352,356, Cl. 128-288.000.

Humber, David C.: *See*—
Phillipps, Gordon H.; Humber, David C.; Ewan, George B.; and Coomber, Barry A., 4,352,798, Cl. 424-242.000.

Hunkeler, Walter; and Kyburz, Emilio, to Hoffmann-La Roche Inc. Imidazo-benzodiazepines and their use. 4,352,815, Cl. 424-273.00R.

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Hunt, Paulmer D.: *See*—
Riggs, Robert R.; and Hunt, Paulmer D., 4,352,299, Cl. 74-84.00R.

Hunter Douglas International, N.V.: *See*—
Vecchiarelli, Francis, 4,352,385, Cl. 160-177.000.

Huntley, Christopher R., to GTE Automatic Electric Laboratories, Inc. Monolithic astable multivibrator circuit. 4,353,039, Cl. 331-113.00R.

Hurlbut, Donovan W.: *See*—
Gokey, Phillip E.; Hurlbut, Donovan W.; Sederholm, Emma L.; Terry, Angel F.; and Jewer, Alan A., 4,353,077, Cl. 346-137.000.

Hutchings, Graham J.: *See*—
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Huynh, Dai-Nghia: *See*—
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Hybrinetics, Inc.: *See—*
Dobkin, Robert C., 4,353,025, Cl. 323-300.000.
Iacoponi, Stefano, to Fiat Auto S.p.A. Differential throttle opening control mechanism. 4,352,483, Cl. 251-229.000.
Iafrate, Gerald J.: *See—*
Ballato, Arthur; and Iafrate, Gerald J., 4,353,027, Cl. 324-56.000.
Ibrahim, Fayez F., to Tyler Refrigeration Corporation. Removable duct panel for multiband open front display case. 4,352,275, Cl. 62-256.000.
Ichizawa, Yoshiyuki; and Nomoto, Tsugio, to Yoshino Kogyosho Co., Ltd. Device for conveying molded pieces. 4,352,424, Cl. 198-482.000.
ICI Americas Inc.: *See—*
Reed, Weldon N.; and Galvin, Thomas J., 4,352,906, Cl. 524-426.000.
Iida, Shinya: *See—*
Mizutani, Tatsumi; Kanai, Norio; Harada, Kunio; Komatsu, Hideo; and Iida, Shinya, 4,352,974, Cl. 219-121.0PD.
Iijima, Nobuo, to Fujitsu Limited. Structure for vibration isolation in an apparatus with a vacuum system. 4,352,643, Cl. 417-313.000.
Ikuta, Hironori: *See—*
Nomoto, Seiichiro; Ikuta, Hironori; Machida, Yoshimasa; Negi, Shigeto; Sugiyama, Isao; Yamauchi, Hiroshi; Nakatsuka, Kenro; and Saito, Isao, 4,352,801, Cl. 424-246.000.
Imai, Katsuhito, to Hiroshi Teramachi. Slide roller bearing. 4,352,526, Cl. 308-6.00C.
Imai, Toshihiro, to Olympus Optical Co., Ltd. Wide-angle photographic camera lens system. 4,352,544, Cl. 350-464.000.
Imperial Chemical Industries Limited: *See—*
Cogswell, Frederic N.; and Tomka, Jiri G., 4,352,927, Cl. 528-502.000.
Higgins, Raymond; Hutchings, Graham J.; Trebilco, Deborah A.; and Starkey, Philip E., 4,352,755, Cl. 549-258.000.
Inaba, Hajimu; Nakajima, Seiichiro; and Inagaki, Shigemi, to Fujitsu Fanuc Limited. Industrial robot. 4,352,620, Cl. 414-225.000.
Inagaki, Shigemi: *See—*
Inaba, Hajimu; Nakajima, Seiichiro; and Inagaki, Shigemi, 4,352,620, Cl. 414-225.000.
Inagawa, Masanobu; Sai, Toshiyuki; Kawarabuki, Seiichi; and Miwa, Naoto, to Mitsubishi Petrochemical Co., Ltd. Method of measuring creatine kinase activity. 4,352,881, Cl. 435-17.000.
Ingestrand, Tore, to Aktiebolaget Bofors. Barrel seal. 4,352,315, Cl. 89-36.00L.
Inomata, Tetsuro; Katsukura, Kazutada; and Takematsu, Hikaru, to Iwasaki Tsushinki Kabushiki Kaisha. Channel switching network. 4,353,066, Cl. 340-825.960.
Inoshita, Yasushi: *See—*
Shimada, Yukio; Suzuki, Naoyoshi; Ohashi, Toshio; and Inoshita, Yasushi, 4,352,452, Cl. 236-13.000.
Inoue, Hideo, to Teac Corporation. Magnetic recording system with signal-controlled bias and equalization. 4,353,100, Cl. 360-65.000.
Institut Francais du Petrole: *See—*
Espitalie, Jean; Madec, Marcel; Leplat, Paul; and Paulet, Jacques, 4,352,673, Cl. 23-230.0EP.
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Hoh, Ying-Chu; Lee, Bao-Dein; Ma, Tieh; Chuang, Wen-Shou; and Wang, Wei-Ko, 4,352,786, Cl. 423-98.000.
Intel Corporation: *See—*
McCollum, John L., 4,352,236, Cl. 29-571.000.
International Business Machines: *See—*
Beck, Vernon D., 4,353,061, Cl. 340-720.000.
International Business Machines Corporation: *See—*
Bohg, Armin, 4,353,076, Cl. 346-65.000.
Dunning, Norman D.; Jervis, Franklin D.; and Taylor, Kenneth W., 4,352,578, Cl. 400-208.000.
Krumm, Horst; Schettler, Helmut; Stahl, Rainer; and Zuhlke, Rainer, 4,353,040, Cl. 333-1.000.
Lee, Francis C.; Mills, Ross N.; and Talke, Frank E., 4,353,078, Cl. 346-140.00R.
Schaible, Paul M.; and Schwartz, Geraldine C., 4,352,716, Cl. 156-643.000.
International Flavors & Fragrances Inc.: *See—*
Boden, Richard M.; and Geiger, John H., Jr, John H., 4,352,743, Cl. 252-174.110.
International Harvester Co.: *See—*
Schantz, Ronald K., 4,352,398, Cl. 172-812.000.
International Telephone and Telegraph Corporation: *See—*
Turbak, Albin F.; El-Kafrawy, Adel; Snyder, Fred W., Jr.; and Auerbach, Andrew B., 4,352,770, Cl. 264-187.000.
Interpace Corporation: *See—*
McNabney, John C., 4,352,453, Cl. 236-13.000.
Inzoli, Luciano; and Piccioni, Gino, to Italtel Societa Italiana Telecomunicazioni S.p.A. Double-face printed-circuit board. 4,352,994, Cl. 307-149.000.
Irvine Sensors Corporation: *See—*
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Ishida, Hiroshi: *See—*
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Ishida, Kazuhiro: *See—*
Yoshida, Kazutoshi; Yano, Ryuji; and Ishida, Kazuhiro, 4,352,995, Cl. 307-265.000.
Ishida, Tsuyoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus for discriminating sheets. 4,352,988, Cl. 250-559.000.
Ishidoshiro, Hiroshi: *See—*
Sando, Yoshikazu; Ishidoshiro, Hiroshi; and Nakano, Eiichi, 4,352,277, Cl. 68-175.000.
Ishihara, Shunichi; Nishigaki, Yuji; Kitajima, Nobuo; and Kitahara, Nobuko, to Canon Kabushiki Kaisha. Voltage distribution difference electrophotographic process. 4,352,875, Cl. 430-42.000.
Ishii, Kunio: *See—*
Kobayashi, Hideaki; Tamuro, Yasuharu; Yasuhara, Takashi; and Ishii, Kunio, 4,353,002, Cl. 310-64.000.
Ishikawa, Tetuo: *See—*
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Ishitsuka, Hideo; Shirai, Haruyoshi; Umeda, Isao; and Suhara, Yasuji, to Hoffmann-La Roche Inc. 3-Alkoxyflavone antiviral agents. 4,352,792, Cl. 424-180.000.
Ishizawa, Yoshiyuki: *See—*
Endoh, Kenjiro; Ishizawa, Yoshiyuki; Tanaka, Masanori; and Iwasaki, Koji, 4,353,060, Cl. 340-347.0AD.
Iskra, Anton L.; Kharchenko, Mikhail S.; and Vasiliev, Jury N. Dam spillway. 4,352,593, Cl. 405-108.000.
Iso-Aho, Kalevi, to Valmet OY. Apparatus for rotatably driving a shell-type roll for use in a paper making machine or the like. 4,352,228, Cl. 29-115.000.
Isoyama, Seizi: *See—*
Watanabe, Yasuo; Isoyama, Seizi; and Yamamichi, Yoshikazu, 4,352,717, Cl. 159-4.00E.
Italtel Societa Italiana Telecomunicazioni S.p.A.: *See—*
Inzoli, Luciano; and Piccioni, Gino, 4,352,994, Cl. 307-149.000.
Italtel S.p.A.: *See—*
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Itoh, Masashi; and Teramae, Kazuo, to Matsushita Electric Industrial Co., Ltd. Electromagnetic pickup cartridge. 4,353,125, Cl. 369-136.000.
Itoh, Takeshi: *See—*
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ITW Limited: *See—*
Meeks, Alan M. G., 4,352,476, Cl. 248-74.00R.
Iwai, Hiroshi: *See—*
Nakayama, Yasuharu; Iwai, Hiroshi; and Sukejima, Hajime, 4,352,902, Cl. 524-40.000.
Iwao, Soichi, to Minolta Camera Kabushiki Kaisha. Electrophotographic fixing device. 4,352,551, Cl. 355-3.0FU.
Iwasaki, Koji: *See—*
Endoh, Kenjiro; Ishizawa, Yoshiyuki; Tanaka, Masanori; and Iwasaki, Koji, 4,353,060, Cl. 340-347.0AD.
Iwasaki Tsushinki Kabushiki Kaisha: *See—*
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Iwata, Hiroshi; Yamaoka, Tetsuo; and Morioka, Akitoshi, to West Electric Co., Ltd. Camera selectively settable to either standard photographic mode or supertelephotographic mode. 4,352,546, Cl. 354-126.000.
Iwatsu Electric Co., Ltd.: *See—*
Uchida, Kozo, 4,352,550, Cl. 355-3.00R.
J. I. Case Company: *See—*
Brandenburg, Lloyd W., Jr., 4,352,456, Cl. 237-12.30R.
Frisbee, Claude M.; and Seaberg, David H., 4,352,626, Cl. 414-722.000.
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Watanabe, Kazuo; and Makabe, Hachiro, 4,353,021, Cl. 318-696.000.
Janovsky, Franz; and Demmer, Erhard. Head gear manipulator for invalids. 4,352,352, Cl. 128-76.00R.
Janssen, Kermit W.; and Mitchell, Andrew, to Certain-teed Corporation. Molded fittings. 4,352,512, Cl. 285-419.000.
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Christopher, Glenn B., 4,352,397, Cl. 166-297.000.
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Chen, Hwang-Chuan; and Jih, Peter E.P., 4,352,572, Cl. 366-145.000.
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Grader, Ronald J.; and Johansen, Richard P., 4,352,740, Cl. 210-760.000.
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Johnson, Carl W. Means for tracking the sun. 4,352,350, Cl. 126-425.000.
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Mesek, Frederick K.; and Mesek, Virginia R., 4,352,355, Cl. 128-287.000.
Johnson, Lennart B., to Teradyne, Inc. Bus bar. 4,352,534, Cl. 339-19.000.
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Boccardo, Hector O. M.; and Jolly, Thomas W., 4,352,365, Cl. 137-68.00R.
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Kemp, David M., Jr.; and Jones, Hartl R., 4,352,682, Cl. 55-165.000.
Jones, James S. Regulator for gas and air mixture. 4,352,677, Cl. 48-180.00C.
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Jonsson, Kurt A., to Rederiaktiebolaget Nordstjernan. Method and apparatus for recovering heat in waste water. 4,352,391, Cl. 165-1.000.
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Flockenhaus, Claus; Joseph, Horst; and Meckel, Joachim, 4,352,618, Cl. 414-148.000.
Journet, Gerard, to Fives-Cail Babcock. Centrifugal drier. 4,352,451, Cl. 233-27.000.
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Mages, Bernhard; and Rock, Erich, 4,352,222, Cl. 16-287.000.
Julke, Bernhard, to Engelbrecht & Lemmerbrock GmbH & Co. Device for extracting hay from a tower silo. 4,352,606, Cl. 406-81.000.
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Shimbo, Masafumi, 4,352,238, Cl. 29-579.000.
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Hayashi, Kazuo; and Hotta, Mitsuhiko, 4,352,987, Cl. 378-150.000.
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Robinson, John W.; and Kaganowicz, Grzegorz, 4,352,836, Cl. 427-39.000.
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Kaiser, Roman; and Lamparsky, Dietmar, to Givaudan Corporation. 3-Butadienyl-2,4,4-trimethylcyclohex-2-enone and derivatives thereof. 4,352,943, Cl. 568-378.000.
Kajiwara, Yuji: *See—*
Noguchi, Tsutomu; Kajiwara, Yuji; Suzuki, Masanori; and Takamizawa, Hideo, 4,353,047, Cl. 333-247.000.
Kakehi, Sasuga: *See—*
Matsui, Toshiharu; and Kakehi, Sasuga, 4,353,045, Cl. 333-190.000.
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Kamada, Akira, to Kyoto Yakuhin Kyogo Kabushiki Kaisha; and Sawai Seiyaku Kabushiki Kaisha. Adjuvant for promoting absorption of therapeutically active substances through the digestive tract. 4,352,800, Cl. 424-246.000.
Kaminaka, Nobuyuki: *See—*
Kanai, Kenji; Kaminaka, Nobuyuki; Nomura, Noboru; and Nouchi, Norimoto, 4,353,102, Cl. 360-126.000.
Kammann, Wilfried, to Werner Kammann Maschinenfabrik GmbH. Screen printing machine. 4,352,326, Cl. 101-123.000.
Kanai, Kenji; Kaminaka, Nobuyuki; Nomura, Noboru; and Nouchi, Norimoto, to Matsushita Electric Industrial Co., Ltd. Thin-film magnetic head. 4,353,102, Cl. 360-126.000.
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Mizutani, Tatsumi; Kanai, Norio; Harada, Kunio; Komatsu, Hideo; and Iida, Shinya, 4,352,974, Cl. 219-121.0PD.
Kanayama, Toshiji: *See—*
Hiranuma, Hidetoshi; Sekiya, Tetsuo; Mizogami, Susumu; Mori, Motokuni; Hanatsuka, Mitsuo; and Kanayama, Toshiji, 4,352,928, Cl. 542-431.000.
Kaneda, Isao, to New Nippon Electric Company, Ltd. Hot cathode discharge lamp lighting device. 4,353,011, Cl. 315-240.000.
Kaneko, Takushi, to Bristol-Myers Company. Antitumor agents. 4,352,936, Cl. 549-332.000.
Kansai Paint Co., Ltd.: *See—*
Nakayama, Yasuharu; Iwai, Hiroshi; and Sukejima, Hajime, 4,352,902, Cl. 524-40.000.
Kapitelman, Leonid V.: *See—*
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Kaplow, Roy; Frank, Robert I.; and Goodrich, Joel, to Massachusetts Institute of Technology. High-intensity solid-state solar-cell device. 4,352,948, Cl. 136-249.000.
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Herr, Alfons K., 4,352,719, Cl. 162-128.000.
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Katsukura, Kazutada: *See—*
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Katto, Takayuki; and Shiiki, Zenya, to Kureha Kagaku Kogyo Kabushiki Kaisha. Vinyl chloride resin composition with multi-stage impact modifier. 4,352,910, Cl. 525-83.000.
Katz, Lawrence E.; and Gay, Walter A., to Olin Corporation. Selected 2-trichloromethyl-4-pyrimidinyl carboxylic esters and their use as fungicides. 4,352,806, Cl. 424-251.000.
Kaufman, Arthur. Portable life support system. 4,352,991, Cl. 307-9.000.
Kawada, Shigeki; and Ishida, Hiroshi, to Fujitsu Fanuc Limited. Operation control apparatus for AC motors. 4,353,023, Cl. 318-762.000.
Kawai, Tsutomu, to Funai Electric Co., Ltd.; and Efuti Giken Co., Ltd. Video tape recorder. 4,353,101, Cl. 360-85.000.
Kawakatsu, Shiro; and Kawasaki, Toshikazu, to Daihatsu Motor Co., Ltd. Alarming apparatus of vehicle. 4,353,055, Cl. 340-52.00D.
Kawamura, Chikara: *See—*
Ukai, Tetsuo; Matsumoto, Hiroshi; and Kawamura, Chikara, 4,352,736, Cl. 210-321.300.
Kawamura, Eiichi: *See—*
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Kawanabe, Tsuyoshi, to Canon Kabushiki Kaisha. Electronic device having a variable density thermal ink jet recorder. 4,353,079, Cl. 346-140.00R.
Kawano, Kyoichiro: *See—*
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Kawarabuki, Seiichi: *See—*
Inagawa, Masanobu; Sai, Toshiyuki; Kawarabuki, Seiichi; and Miwa, Naoto, 4,352,881, Cl. 435-17.000.
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Takagi, Izumi, 4,352,501, Cl. 280-16.000.
Kawasaki, Toshikazu: *See—*
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Kay, Charles. Slide dock. 4,352,597, Cl. 405-219.000.
Kay, George; and Keskinen, Alan, to Vacco Industries. Disc-reel sound suppressor. 4,352,373, Cl. 137-561.00A.
Kaye, Stanton; and Schreier, Curtis, to Kaye, Stanton. Title edge apparatus for serially produced collated copy. 4,352,554, Cl. 355-40.000.
KB Denver, Inc.: *See—*
Pounds, Walter R., 4,352,968, Cl. 200-302.000.
Kehoe, Gary: *See—*
Puglia, Wayne J.; Kehoe, Gary; Witzel, Frank; Clark, K. Warren; and Mackay, Donald A. M., 4,352,824, Cl. 426-5.000.
Kelco Biospecialties Limited: *See—*
Maury, Lucien G., 4,352,882, Cl. 435-101.000.
Kelsey-Hayes Co.: *See—*
Massicotte, Raymond C., 4,352,732, Cl. 209-17.000.
Kemp, David M.: *See—*
Notardonato, Luigi; Pulawski, Casimir; and Kemp, David M., 4,352,679, Cl. 55-38.000.
Kemp, David M., Jr.; and Jones, Hartl R., to FMC Corporation. Deoxygenating apparatus. 4,352,682, Cl. 55-165.000.
Kemper, Reinhard: *See—*
Lotsch, Wolfgang; Kemper, Reinhard; and Schefczik, Ernst, 4,352,932, Cl. 544-295.000.
Kempter, Michael: *See—*
Menk, Hermann; and Kempter, Michael, 4,352,765, Cl. 264-22.000.
Kenergy Corporation: *See—*
Weisner, Kent A.; and Walls, Lester L., Jr., 4,352,776, Cl. 264-522.000.
Kepner, Larry A.: *See—*
Benschop, Hendrik P.; Kepner, Larry A.; and de Jong, Leonardus P. A., 4,352,810, Cl. 424-263.000.

Kern & Co. AG: *See*—
Haefliger, Erwin; Hinden, Fritz; and Lardelli, Aldo, 4,352,556, Cl. 356-1.000.
Keskinen, Alan: *See*—
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Kharchenko, Mikhail S.: *See*—
Iskra, Anton L.; Kharchenko, Mikhail S.; and Vasiliev, Jury N., 4,352,593, Cl. 405-108.000.
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Goldraikh, Genrikh M.; Dubinenko, Askold F.; Kapitelman, Leonid V.; Krivak, Viktor A.; Livshits, Viktor Y.; Manenkov, Konstantin M.; Khomutov, Semen M.; and Khomchenko, Eduard N., 4,352,611, Cl. 408-37.000.
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Goldraikh, Genrikh M.; Dubinenko, Askold F.; Kapitelman, Leonid V.; Krivak, Viktor A.; Livshits, Viktor Y.; Manenkov, Konstantin M.; Khomutov, Semen M.; and Khomchenko, Eduard N., 4,352,611, Cl. 408-37.000.
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Kiesewetter, Holger: *See*—
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Kim, Dong H.; and McCaully, Ronald J., to American Home Products Corporation. 3-[[(2,3-Dihydro-1H-indol-2-yl)carbonyl]thio]-propanoic (and acetic) acids as intermediates. 4,352,753, Cl. 260-326.12R.
Kimble, Joe W.; and Dotson, Edsel E., to Cerberonics, Inc. Small arms laser training device. 4,352,665, Cl. 434-22.000.
Kimbrough, Laurence B.; and Wilbur, Leonard P., to RCA Corporation. System for applying and tensioning an implosion protecting band to a CRT with a tension between selected limits. 4,352,226, Cl. 29-25.190.
Kimoto, Yuji, to Sanyo Electric Co., Ltd.; and Tokyo Sanyo Electric Co., Ltd. FM Detecting circuit. 4,353,034, Cl. 329-103.000.
Kimura, Kenji: *See*—
Satoh, Ken; Watanabe, Seizo; Saitou, Sinichi; Kato, Toshikazu; Ohshima, Ken; Shibata, Tsutomu; and Kimura, Kenji, 4,352,473, Cl. 242-199.000.
King, Irene T.: *See*—
King, Lawrence J.; and King, Irene T., 4,353,054, Cl. 340-31.00C.
King, Lawrence J.; and King, Irene T. Stop sign watcher, a device for monitoring vehicles at full stop sign intersections. 4,353,054, Cl. 340-31.00C.
King, Wendell L., to Medtronic, Inc. Semiconductor low-threshhold electrode. 4,352,360, Cl. 128-786.000.
Kinsell, Robert C.; Saba, Michael P.; and Strang, James E., to Garrett Corporation, The. Fluid conditioning apparatus and system. 4,352,273, Cl. 62-87.000.
Kinzig, Charles M.: *See*—
Gleason, John G.; Kinzig, Charles M.; and Bryan, Deborah L., 4,352,757, Cl. 549-513.000.
Kirby, Robert: *See*—
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Kitahara, Nobuko: *See*—
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Kitajima, Nobuo: *See*—
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Kleinschmidt, Peter, to Siemens Aktiengesellschaft. Circuit for alternate transmission and reception with only one sound source transducer. 4,353,004, Cl. 310-318.000.
Klinedinst, Keith A.; and Murphy, Francis G., to GTE Laboratories Incorporated. Electrochemical cell with improved cathode current collector and method. 4,352,866, Cl. 429-101.000.
Klockner-Humboldt-Deutz AG: *See*—
Moser, Gottfried; and Gross, Hansjurgen, 4,352,455, Cl. 237-12.30R.
Kluger, Edward W.; and Welch, Calvin D., to Milliken Research Corporation. Aminoalkoxypentaerythritols. 4,352,919, Cl. 528-111.000.
Kluger, Edward W., to Milliken Research Corporation. Epoxy resin compositions. 4,352,920, Cl. 528-111.000.
Kluger, Edward W.; and Welch, Calvin D., to Milliken Research Corporation. Aminoalkoxyhexanes and epoxy resin compositions containing them. 4,352,921, Cl. 528-111.000.
Knecht, Gene C., to Westinghouse Electric Corp. Unidirectional register apparatus. 4,352,979, Cl. 235-91.00A.
Knoll, William C., to GTE Products Corporation. Dimming circuit for an electronic ballast. 4,353,009, Cl. 315-220.000.
Knoll, William C.; and Bay, David L., to GTE Products Corporation. Transistor drive scheme for fluorscent lamp ballast. 4,353,010, Cl. 315-220.000.
Kobayashi, Hideaki; Tamuro, Yasuharu; Yasuhara, Takashi; and Ishii, Kunio, to Hitachi, Ltd. Rotary electrical machine connected to high-temperature load. 4,353,002, Cl. 310-64.000.
Kobayashi, Takehiro, to Sharp Kabushiki Kaisha. Bonnet type steamer. 4,352,248, Cl. 34-88.000.
Kobylinski, Thaddeus P.: *See*—
Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., 4,352,946, Cl. 568-902.000.
Koch, Jurgen. Beta-cyclodextrin as anti-acne agent. 4,352,794, Cl. 424-180.000.
Koch, Richard C.: *See*—
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Kocourek, Franz: *See*—
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Koeritz, Richard N.: *See*—
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Kohno, Mitsuo: *See*—
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Kohzai, Yoshinori; and Fujioka, Yoshiki, to Fujitsu Fanuc Limited. Control system for synchronized operation of machine tool motors. 4,353,018, Cl. 318-571.000.
Koizumi, Haruo: *See*—
Nakamura, Hideo; Funabashi, Tsuneo; and Koizumi, Haruo, 4,353,030, Cl. 328-38.000.
Koizumi, Junji: *See*—
Toda, Yuzo; Koizumi, Junji; Ogawa, Masasi; Sera, Hidefumi; and Kubodera, Seiiti, 4,352,873, Cl. 430-545.000.
Kolchinsky, Abel E.; Bowbin, John F.; and Davis, Wayne M., to Miller Fluid Power Corporation. Expandable cushion plunger for piston and cylinder devices. 4,352,318, Cl. 91-395.000.
Kolze, Lawrence A., to Eaton Corporation. Precision flow control device. 4,352,372, Cl. 137-504.000.
Komada, Hitoshi. Method of connecting a coaxial cable to an electrical connector. 4,352,240, Cl. 29-854.000.
Komatsu, Hideo: *See*—
Mizutani, Tatsumi; Kanai, Norio; Harada, Kunio; Komatsu, Hideo; and Iida, Shinya, 4,352,974, Cl. 219-121.0PD.
Kondo, Kazuo: *See*—
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Koninklijke Bos Kalis Westminster Group N.V.: *See*—
de Vries, Huibert, 4,352,250, Cl. 37-58.000.
Konishiroku Photo Industry Co., Ltd.: *See*—
Hatakeyama, Noboru, 4,352,490, Cl. 271-289.000.
Kono, Hisashi; Terai, Kenji; Hisadomi, Masaki; Uemura, Katumi; Ohta, Sumio; and Yamamoto, Yoshiichi, to Ube Industries, Ltd. Process for polymerizing formaldehyde. 4,352,923, Cl. 528-233.000.
Koor Metals Ltd.: *See*—
Masel, Ruben, 4,352,458, Cl. 239-77.000.
Kooymans, Petrus G.; Wintraecken, Johannes J. M. H.; Raudenbusch, Werner T.; Seelen-Kruijssen, Josepha M. E.; and Schreurs, Gerardus C. M., to Shell Oil Company. Process for coating and curing thermosetting resinous binder compositions using transesterification catalyst. 4,352,842, Cl. 427-385.500.
Kopenhaver, Robert L., to Certain-teed Corporation. Method of manufacturing roofing shingles having multiple ply appearance. 4,352,837, Cl. 427-187.000.
Kopp, Richard; Meyborg, Holger; and Schwindt, Jurgen, to Bayer Aktiengesellschaft. Polyol mixtures containing reactive blowing agents and use thereof for the production of foamed polyurethanes. 4,352,896, Cl. 521-118.000.
Kosareo, Daniel N.: *See*—
McNamee, James W., Sr.; and Kosareo, Daniel N., 4,352,535, Cl. 339-75.0MP.
Kovach, Alan J.: *See*—
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Kovacs, Gyula: *See*—
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Kovalovsky, Oscar. Drag control for fishing reels. 4,352,474, Cl. 242-218.000.
Krampe, Dietrich; and Schleicher, Herbert, to Siemens Aktiengesellschaft. Apparatus for changing the relative phase angles of output shafts of a multiple motor electric drive. 4,353,015, Cl. 318-41.000.
Kranz, Dale P. Greenhouse structure. 4,352,256, Cl. 47-17.000.
Krauss, Werner, to Claudius Peters AG. Mixing apparatus and method for mixing. 4,352,569, Cl. 366-107.000.
Kress, Erwin: *See*—
Brunner, Anton; and Kress, Erwin, 4,353,073, Cl. 343-779.000.
Krinski, Thomas L.; and Garey, Carroll L., to Ralston Purina Company. Modified vegetable protein adhesive binder. 4,352,692, Cl. 106-79.000.
Krivak, Viktor A.: *See*—
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Krivenko, Valery G.: *See*—
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Krob, Erwin; and Svoboda, Josef, to TMC Corporation. Sole-support mechanism. 4,352,507, Cl. 280-605.000.

Krone GmbH: *See*—
Warnecke, Gunter; and Schiller, Gerhard, 4,352,959, Cl. 179-90.00K.

Krumm, Horst; Schettler, Helmut; Stahl, Rainer; and Zuhlke, Rainer, to International Business Machines Corporation. Multi-layer module with constant characteristic impedance. 4,353,040, Cl. 333-1.000.

Krumnikl, Svatopluk: *See*—
Leuthold, Werner; Krumnikl, Svatopluk; and Babel, Gunther, 4,352,581, Cl. 401-85.000.

Krupick, Walter J., to Singer Company, The. Low cost flexure assembly. 4,352,233, Cl. 29-434.000.

Krupp Polysius AG: *See*—
Steiner, Janos; Wenzly, Kalman; Toth, Jozsef T.; Tiggesbaumker, Peter; Goldmann, Wolf; and Butschko, Gerhard, 4,352,660, Cl. 432-14.000.

Kubo, Keishi; and Kawamura, Eiichi, to Ricoh Company, Ltd. Thermosensitive recording material. 4,352,860, Cl. 428-478.200.

Kubodera, Seiiti: *See*—
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Kuchuk-Yatsenko, Sergei I.: *See*—
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Landoll, Leo M., to Hercules Incorporated. Use of hydrophobically modified water soluble polymers in suspension polymerization. 4,352,916, Cl. 526-200.000.

Landrum, Michael T.; and Anderson, Terrance M., to Owatonna Tool Company. Air-hydraulic pump. 4,352,644, Cl. 417-402.000.

Lang, Gusztav: *See*—
Leibhard, Erich; Richter, Hanno; Lang, Gusztav; Popp, Franz; and Goellnitz, Heinz, 4,352,442, Cl. 222-146.0HE.

Langdon, Michael. Capsules containing cementitious compositions. 4,352,693, Cl. 106-104.000.

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Larimore, Franklin C.; and Heilmann, Steven M., to Minnesota Mining and Manufacturing Company. Biomedical electrode. 4,352,359, Cl. 128-640.000.

Larson, David L., to Sherwood Refractories, Inc. Precision silica cones for sand casting of steel and iron alloys. 4,352,390, Cl. 164-351.000.

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Larson, Hugo R.; and Biswas, Chandi P., to Abex Corp. Cast iron railroad brake shoes. 4,352,416, Cl. 188-251.00M.

LaRue, Forrest N.; and Wheeler, Lionel H., to Crutcher Resources Corporation. Hydraulic wedge mandrel. 4,352,285, Cl. 72-466.000.

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Lee, Chung J., to Plastics Engineering Company. Polyethyleneterephthalate ternary blends. 4,352,907, Cl. 524-537.000.

Lee, Francis C.; Mills, Ross N.; and Talke, Frank E., to International Business Machines Corporation. Ink jet print head having dynamic impedance adjustment. 4,353,078, Cl. 346-140.00R.

Lee, Gilbert F.: *See*—
Madigosky, Walter M.; and Lee, Gilbert F., 4,352,292, Cl. 73-575.000.

Lee, Robert L. Dental articulator frames and method of making. 4,352,662, Cl. 433-56.000.

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Lehman, Frederick D., to CPT Corporation. Drive circuits for a high resolutions cathode ray tube display. 4,353,013, Cl. 315-387.000.

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Leonard, Charles F.; Leonard, Claude H., deceased; and Leonard, legal representative; by Frank W. Support assembly for mud-flaps. 4,352,502, Cl. 280-154.50R.

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Lewandowski, Franklin D.: *See—*
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Lewis, Howard. Rabbit feeder. 4,352,339, Cl. 119-18.000.
Lewis, Roy D.; and Borg, Bernt V., to Norden Packaging Machinery Aktiebolag. Controllable volume dosing device. 4,352,444, Cl. 222-309.000.
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Libit, Sidney M., to U.S. Cap & Closure, Inc. Dispenser having a trigger-bulb pump. 4,352,443, Cl. 222-207.000.
Licentia Patent-Verwaltungs G.m.b.H.: *See—*
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Lichtenthaler, Frieder W.: *See—*
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Lin, Wen, to Western Electric Company, Inc. Double crucible Czochralski crystal growth apparatus. 4,352,784, Cl. 422-249.000.
Linde Aktiengesellschaft: *See—*
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Liu, Chao-Min; Tresner, Homer D.; and Westley, John, to Hoffmann-La Roche Inc. Antibiotic X-14885A. 4,352,934, Cl. 548-217.000.
Liu, Liang-Huang. Electrical plug. 4,352,540, Cl. 339-196.00R.
Livshits, Viktor Y.: *See—*
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LNS SA: *See—*
Neukomm, Walter, 4,352,615, Cl. 414-17.000.
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Trudel, Murray L.; Lockwood, George C.; and Evans, G. Glenn, 4,353,083, Cl. 357-23.000.
Loew, Jonathan A., to P.O.P. Displays, Inc. Article holding assembly. 4,352,478, Cl. 248-221.300.
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Lohmar, Ernst, to Carl Freudenberg, Firma. Method for the manufacture of lightweight foam materials from crystalline thermoplastic materials and the resultant products. 4,352,892, Cl. 521-79.000.
Lohr, Karl-Dieter; Ullrich, Martin; and Tresper, Erhard, to Bayer Aktiengesellschaft. Twin-screw machine with screws rotatable in the same direction. 4,352,568, Cl. 366-84.000.
Lombard, Marco H., to Emerson Electric Co. Apparatus for cutting vegetation. 4,352,243, Cl. 30-276.000.
Lorch, Werner. Mixing valve for liquids. 4,352,369, Cl. 137-270.000.
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Lorteije, Jean H. J.; Warrink, Geert; and Schneider, Henri W., to U.S. Philips Corporation. Modulator circuit for a matrix display device. 4,353,062, Cl. 340-767.000.
Lotsch, Wolfgang; Kemper, Reinhard; and Schefczik, Ernst, to BASF Aktiengesellschaft. Isoindoline colorants. 4,352,932, Cl. 544-295.000.
Lott, W. Gerald: *See—*
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Loveless, W. L.; Trott, Richard J.; Heath, Robert H.; and Glick, William L., to GCA Corporation. Automatic wafer processing system and method. 4,352,607, Cl. 406-88.000.
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Luce, David A.; and Scott, James, to Norlin Industries, Inc. Synthesizer preset editing techniques. 4,352,311, Cl. 84-1.190.
Lundberg, Lars. Mobile chair. 4,352,218, Cl. 114-363.000.
Lyon Metal Products, Incorporated: *See—*
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M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See—*
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Mackay, Donald A. M.: *See—*
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MacKay, Fredric M.: *See—*
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Madigosky, Walter M.; and Lee, Gilbert F., to United States of America, Navy. Instrument for measuring dynamic viscoelastic properties. 4,352,292, Cl. 73-575.000.
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Maehara, Osamu; and Sasaki, Tooru, to Ono Sokki Co., Ltd. Instantaneous torque determining apparatus. 4,352,295, Cl. 73-862.340.
Magerle, Karl. Method and apparatus for producing molded plastic articles such as packaging tubes. 4,352,775, Cl. 264-500.000.
Mages, Bernhard; and Rock, Erich, to Julius Blum Gesellschaft m. b. H. Hinge. 4,352,222, Cl. 16-287.000.
Magyar Aluminiumipari Troszt: *See—*
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Maier, Maxemin; Wittkugel, Heinz; Liepelt, Klaus J.; and Homeier, Jorn, to H.F. & Ph.F. Reemtsma G.m.b.H. & Co. Method and apparatus for sorting foreign bodies from material on a moving conveyor belt. 4,352,430, Cl. 209-577.000.
Makabe, Hachiro: *See—*
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Makhijani, Raju T., to American Sterilizer Company. Apparatus for closing the door of a pressure chamber. 4,352,439, Cl. 220-316.000.
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Mallinckrodt International Corp.: *See—*
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Marchionda, Tony F. Tennis racket. 4,352,495, Cl. 273-73.00C.
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Marshall, Larry R., to Du Pont de Nemours, E. I., and Company. Nozzle for flash-extrusion apparatus. 4,352,650, Cl. 425-174.80E.
Martin, Frederick W. Scanning ion microscope. 4,352,985, Cl. 250-306.000.

Martinmaas, Werner W. Socket wrench with interchangeable sockets stored in handle. 4,352,306, Cl. 81-177.00N.
Martinmaas, Werner W. Socket wrench with interchangeable sockets stored in handle. 4,352,307, Cl. 81-177.00N.
Maru, Hansraj C., to Energy Research Corporation. Apparatus and method for producing high pressure steam in a fuel cell system. 4,352,863, Cl. 429-17.000.
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Masel, Ruben, to Koor Metals Ltd. Saturated vapor gun. 4,352,458, Cl. 239-77.000.
Mashita, Kentaro; and Hanji, Katsumi, to Sumitomo Chemical Company, Limited. Process for the polymerization of ethylene. 4,352,915, Cl. 526-65.000.
Masica, Michael J., Jr.: *See*—
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Massachusetts Institute of Technology: *See*—
Awerbuch, Tamara E., 4,352,880, Cl. 435-6.000.
Kaplow, Roy; Frank, Robert I.; and Goodrich, Joel, 4,352,948, Cl. 136-249.000.
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Masuda, Kazuo. Method of producing a decorative, cylindrical, coated article. 4,352,235, Cl. 29-527.400.
Mathy, Henri L.; and DeFourny, Jacques A., to Centre de Recherches Metallurgiques-Centrum voor Research in de Metallurgie. Wet welding electrodes. 4,352,970, Cl. 219-72.000.
Matsui, Hiroshi; Nishioka, Matsuo; and Onizawa, Takashi, to Matsushita Electric Industrial Co., Ltd. Rotary variable resistor. 4,353,053, Cl. 338-184.000.
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Matsumoto, Jun-ichi; Takase, Yoshiyuki; and Nishimura, Yoshiro, to Dainippon Pharmaceutical Co., Ltd.; and Laboratoire Roger Bellon. Novel naphthyridine derivatives, intermediates thereof, processes for preparation thereof, and use thereof. 4,352,803, Cl. 424-251.000.
Matsumoto, Kenji; and Suzuki, Yasuo, to Bridgestone Tire Co., Ltd. Heavy duty pneumatic radial tire. 4,352,383, Cl. 152-352.00R.
Matsumoto, Tom T., to Matsumoto, Tom T. Refuse compaction trailer. 4,352,624, Cl. 414-400.000.
Matsuoka, Michio: *See*—
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Matsuoka, Yukinori; Muto, Yoshihiko; and Kohno, Mitsuo, to Asahi Kasei Kogyo Kabushiki Kaisha. Biaxially drawn polyhexamethylene adipamide film and process for producing same. 4,352,926, Cl. 528-335.000.
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Maury, Lucien G., to Kelco Biospecialties Limited. Production of xanthan gum by emulsion fermentation. 4,352,882, Cl. 435-101.000.
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McCollum, John L., to Intel Corporation. Double field oxidation process. 4,352,236, Cl. 29-571.000.
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McCoy, Oval O., Jr. Slatted window insulating insert. 4,352,384, Cl. 160-172.000.
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McGowan, Philip J., to Outboard Marine Corporation. Marine propulsion device with trim sensitive movable trim tab. 4,352,666, Cl. 440-53.000.
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McNabney, John C., to Interpace Corporation. Fan control for variable air volume terminal unit. 4,352,453, Cl. 236-13.000.
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King, Wendell L., 4,352,360, Cl. 128-786.000.
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Meier, Walter, to Contraves AG. Connection device for a screened cable. 4,352,950, Cl. 174-35.00C.
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Meyer, James H. M., to Sundstrand Corporation. Solenoid pump adapted for noiseless operation. 4,352,645, Cl. 417-417.000.
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Mims, James H., to Westinghouse Electric Corp. Method of reducing side lobes of complementary coded pulses in a coherent pulse compression doppler radar receiving system. 4,353,067, Cl. 343-17.2PC.

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Minden, Henry T., to Sperry Corporation. Passive ring laser rate of turn device with acousto-optic modulation. 4,352,562, Cl. 356-350.000.

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Miska, Stanley R., to Schlegel Corporation. Pile weather strip with barrier fibers and body fibers. 4,352,845, Cl. 428-88.000.

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Miura, Kiyoshi; Watanabe, Naomitsu; and Tomita, Yoshifumi, to Hitachi, Ltd. Photoresist composition. 4,352,878, Cl. 430-167.000.

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Mizutani, Tatsumi; Kanai, Norio; Harada, Kunio; Komatsu, Hideo; and Iida, Shinya, to Hitachi, Ltd. Plasma etcher having isotropic subchamber with gas outlet for producing uniform etching. 4,352,974, Cl. 219-121.0PD.

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Moore, Edward A., Jr., to Bethlehem Steel Corporation. Bearing retaining and positioning means. 4,352,229, Cl. 29-116.00R.

Moore, Neil A.: *See*—
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Moudgil, Brij M.; and Roeschlaub, John G., to Occidental Research Corporation. Apparatus for selective wetting of particles. 4,352,731, Cl. 209-9.000.
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Murray, James G., to Mobil Oil Corporation. Blends of polystyrene or poly (p-methylstyrene) and p-methylstyrene-diene-styrene block copolymers. 4,352,908, Cl. 525-98.000.
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Narusawa, Toshiaki; Okada, Seiji; Muramatsu, Kiyohide; Yagishita, Teruo; and Okuyama, Hirohumi, to Fujitsu Limited. Electrophotographic developing process using flash fixation and toner therefor. 4,352,877, Cl. 430-97.000.
Nastas, Vitaly I.: *See—*
Grechanliisky, Stepan S.; Grishanov, Ivan I.; Dimitraki, Sergei N.; Miroshnichenko, Vladimir S.; and Nastas, Vitaly I., 4,352,465, Cl. 242-7.120.
National Semiconductor Corporation: *See—*
Black, William C., 4,353,105, Cl. 361-101.000.
National Starch and Chemical Corp.: *See—*
Stanley, Henry, 4,352,858, Cl. 428-423.100.
Naylor, Floyd E., to Phillips Petroleum Company. Conversion of alpha-methylstyrene-type monomers in the formation of copolymers with conjugated diene monomers. 4,352,912, Cl. 525-314.000.
NCR Corporation: *See—*
Trudel, Murray L.; Lockwood, George C.; and Evans, G. Glenn, 4,353,083, Cl. 357-23.000.
Neal, David B.: *See—*
Hardigg, James S.; Strzegowski, Joseph C., Jr.; Burgess, Asial L., Jr.; and Neal, David B., 4,352,977, Cl. 219-243.000.
Nederlandse Centrale Organisatie Voor Toegepast-Natuurwetenschappelijkonderzoek: *See—*
Benschop, Hendrik P.; Kepner, Larry A.; and de Jong, Leonardus P. A., 4,352,810, Cl. 424-263.000.
Negi, Shigeto: *See—*
Nomoto, Seiichiro; Ikuta, Hironori; Machida, Yoshimasa; Negi, Shigeto; Sugiyama, Isao; Yamauchi, Hiroshi; Nakatsuka, Kenro; and Saito, Isao, 4,352,801, Cl. 424-246.000.
Neils, John J. Heat transfer measuring apparatus. 4,352,290, Cl. 374-110.000.
Nelson, Dale H.: *See—*
Davis, Paul C.; Jackson, Raymond G.; Nahas, Joseph J.; Nelson, Dale H.; Ong, DeWitt G.; and Wittman, Brian A., 4,352,958, Cl. 179-84.0VF.
Nemiroff, Michael H., to Burroughs Corporation. Thermally stable magnetic film which resists hard bubbles. 4,352,862, Cl. 428-694.000.
Nemoto, Isao: *See—*
Tohyama, Shigeo; Akitomo, Nobuo; and Nemoto, Isao, 4,352,561, Cl. 356-332.000.
Nemoto, Masanori: *See—*
Ogata, Masatsugu; Takasaki, Hirokazu; Nemoto, Masanori; Narahara, Toshikazu; Hironaka, Kenichi; and Ishikawa, Tetuo, 4,352,897, Cl. 523-220.000.
Nessel, Jiri M., deceased; and by Alexander, Alena, administrator. Self-leveling and grade setting laser apparatus. 4,352,560, Cl. 356-247.000.
Neukomm, Walter, to LNS SA. Feeder for automatic lathe. 4,352,615, Cl. 414-17.000.
Neville, Leonard H. Rigger for a rowing or sculling boat. 4,352,667, Cl. 440-105.000.
New Hudson Corporation: *See—*
Sukenik, Robert J., 4,352,230, Cl. 29-125.000.
New Nippon Electric Company, Ltd.: *See—*
Kaneda, Isao, 4,353,011, Cl. 315-240.000.
Newman, Charles L., to Minnesota Mining and Manufacturing Company. Means for the storage and aseptic delivery of sterilized articles. 4,352,429, Cl. 206-439.000.
Newman, Francis M., Jr.: *See—*
Silvus, Howard S., Jr.; Newman, Francis M., Jr.; and Swanson, Robert K., 4,352,983, Cl. 250-227.000.
News Log International, Inc.: *See—*
Gokey, Phillip E.; Hurlbut, Donovan W.; Sederholm, Emma L.; Terry, Angel F.; and Jewer, Alan A., 4,353,077, Cl. 346-137.000.
Neyret, Guy, to Sodex-Magister, Societe d'Exploitation des Brevets Neiman. Anti-theft devices on motor vehicles. 4,352,278, Cl. 70-252.000.
NGK Spark Plug Co., Ltd.: *See—*
Takami, Akio; and Kondo, Kazuo, 4,352,889, Cl. 501-15.000.
Nichols, Philip T. Tent apparatus and method. 4,352,362, Cl. 135-3.00E.

Nielsen, Otto V.: *See*—
Jacobsen, Edmond M.; Nielsen, Otto V.; and Persson, Torsten B., 4,352,649, Cl. 425-83.100.
Niemeyer, Matthias: *See*—
Herbst, Heiner; and Niemeyer, Matthias, 4,353,084, Cl. 357-30.000.
Nijboer, Jakob G.: *See*—
Carasso, Marino G.; and Nijboer, Jakob G., 4,353,130, Cl. 375-114.000.
Niki, Eiji: *See*—
Sugano, Takuo; Niki, Eiji; Okabe, Yoichi; and Akiyama, Tatsuo, 4,352,726, Cl. 204-195.00M.
Nippon Electric Co., Ltd.: *See*—
Kai, Tomokazu; and Saito, Akio, 4,352,955, Cl. 179-2.0EB.
Mori, Toshihiro, 4,353,065, Cl. 340-825.440.
Nishiwaki, Mitsuo, 4,353,129, Cl. 375-112.000.
Noguchi, Tsutomu; Kajiwara, Yuji; Suzuki, Masanori; and Takamizawa, Hideo, 4,353,047, Cl. 333-247.000.
Sakurai, Hidekazu, 4,353,096, Cl. 358-263.000.
Tanahashi, Kyoji, 4,353,001, Cl. 307-542.000.
Nippon Hoso Kyokai: *See*—
Taketoshi, Kazuhisa; and Ogusu, Chihaya, 4,352,834, Cl. 427-38.000.
Nippon Kogaku K.K.: *See*—
Sasaya, Toshihiro, 4,352,547, Cl. 354-200.000.
Toyoda, Kenji, 4,352,548, Cl. 354-286.000.
Nippon Steel Corporation: *See*—
Tada, Fusao; Itoh, Takeshi; Oka, Joji; and Okamoto, Akira, 4,352,899, Cl. 523-451.000.
Nippondenso Co., Ltd.: *See*—
Fukui, Tomonori; and Eguchi, Osamu, 4,352,321, Cl. 98-2.110.
Nishida, Takayuki: *See*—
Sakai, Masao; and Nishida, Takayuki, 4,352,617, Cl. 414-95.000.
Nishigaki, Yuji: *See*—
Ishihara, Shunichi; Nishigaki, Yuji; Kitajima, Nobuo; and Kitahara, Nobuko, 4,352,875, Cl. 430-42.000.
Nishikawa, Mitsuyo: *See*—
Kurihara, Nobuo; Nishikawa, Mitsuyo; Nagahashi, Yoshitoshi; and Takechi, Masafumi, 4,352,293, Cl. 73-593.000.
Nishimura, Yoshiro: *See*—
Matsumoto, Jun-ichi; Takase, Yoshiyuki; and Nishimura, Yoshiro, 4,352,803, Cl. 424-251.000.
Nishino, Yasukazu: *See*—
Tatematsu, Kenzou; Sugihara, Yasuhiro; Andou, Hiroyuki; Seki, Tatsuo; Dezaki, Yoshito; and Nishino, Yasukazu, 4,353,095, Cl. 358-260.000.
Nishioka, Matsuo: *See*—
Matsui, Hiroshi; Nishioka, Matsuo; and Onizawa, Takashi, 4,353,053, Cl. 338-184.000.
Nishiwaki, Mitsuo, to Nippon Electric Co., Ltd. Digital data transmission system. 4,353,129, Cl. 375-112.000.
Nishiyodo Air Conditioner Co., Ltd.: *See*—
Ogata, Masami; Yoshihara, Motoshi; and Tada, Masahira, 4,352,227, Cl. 29-33.00F.
Nissan Motor Co., Ltd.: *See*—
Aoyama, Shunichi; and Miisho, Kazuyuki, 4,352,344, Cl. 123-90.180.
Hirabayashi, Yuji, 4,352,271, Cl. 60-670.000.
Osano, Hisashi; and Morozumi, Takuro, 4,352,346, Cl. 123-440.000.
Osano, Hisashi; and Morozumi, Takuro, 4,352,347, Cl. 123-440.000.
Saito, Yoshihiro; Sakai, Shigeru; and Endo, Tsuneo, 4,352,510, Cl. 280-727.000.
Shimada, Yukio; Suzuki, Naoyoshi; Ohashi, Toshio; and Inoshita, Yasushi, 4,352,452, Cl. 236-13.000.
Nissho Corporation: *See*—
Ujihara, Yoshio, 4,352,354, Cl. 128-214.00R.
Noda, Masaru, to Hitachi, Ltd. Divider circuit. 4,353,000, Cl. 307-490.000.
Noguchi, Takeshi: *See*—
Yamahira, Yoshiya; Noguchi, Takeshi; Fujioka, Keiji; Noguchi, Tetsuo; and Sato, Shigeji, 4,352,793, Cl. 424-180.000.
Noguchi, Tetsuo: *See*—
Yamahira, Yoshiya; Noguchi, Takeshi; Fujioka, Keiji; Noguchi, Tetsuo; and Sato, Shigeji, 4,352,793, Cl. 424-180.000.
Noguchi, Tsutomu; Kajiwara, Yuji; Suzuki, Masanori; and Takamizawa, Hideo, to Nippon Electric Co., Ltd. $(1-x)BaO.xTiO_2$ System dielectric material for use in a microwave device. 4,353,047, Cl. 333-247.000.
Noh, Edwin C. S. Frying pan with a removable grease catcher. 4,352,324, Cl. 99-425.000.
Nomoto, Seiichiro; Ikuta, Hironori; Machida, Yoshimasa; Negi, Shigeto; Sugiyama, Isao; Yamauchi, Hiroshi; Nakatsuka, Kenro; and Saito, Isao, to Eisai Co., Ltd. Cephem derivatives and antibacterial agents comprising said compounds. 4,352,801, Cl. 424-246.000.
Nomoto, Tsugio: *See*—
Ichizawa, Yoshiyuki; and Nomoto, Tsugio, 4,352,424, Cl. 198-482.000.
Nomura, Noboru: *See*—
Kanai, Kenji; Kaminaka, Nobuyuki; Nomura, Noboru; and Nouchi, Norimoto, 4,353,102, Cl. 360-126.000.
Noorlander, Daniel O. Method of making inflation for teat cup assembly. 4,352,234, Cl. 29-450.000.
Norcem A.S.: *See*—
Smith-Johannsen, Robert, 4,352,694, Cl. 106-106.000.
Norden Packaging Machinery Aktiebolag: *See*—
Lewis, Roy D.; and Borg, Bernt V., 4,352,444, Cl. 222-309.000.
Norlin Industries, Inc.: *See*—
Luce, David A.; and Scott, James, 4,352,311, Cl. 84-1.190.
North American Car Corporation: *See*—
Anderson, Arthur I.; and Harvatin, Louis J., 4,352,331, Cl. 105-248.000.
North American Van Lines, Inc.: *See*—
Gasper, John S., 4,352,516, Cl. 294-81.00R.
Norton Company: *See*—
Jenkins, Trevor L., 4,352,773, Cl. 264-262.000.
Norton, James F.: *See*—
Olson, Daniel R.; Griffing, Bruce F.; and Norton, James F., 4,352,839, Cl. 427-240.000.
Norton, William W., to Baxter Travenol Laboratories, Inc. Process and apparatus for manufacturing plastic containers. 4,352,669, Cl. 493-213.000.
Nortron Corporation: *See*—
Curchod, Donald B.; and Arnold, Arthur K., 4,352,291, Cl. 73-462.000.
Norwood, William L., to Logic Controls Corp. Controller for well installations. 4,352,376, Cl. 137-624.150.
Nossek, Josef, to Siemens Aktiengesellschaft. Switched-capacitor filter circuit having at least one simulated inductor and having a resonance frequency which is one-sixth of the sampling frequency. 4,353,044, Cl. 333-173.000.
Notardonato, Luigi; Pulawski, Casimir; and Kemp, David M., to FMC Corporation. Deoxygenating equipment and method of operation. 4,352,679, Cl. 55-38.000.
Nouchi, Norimoto: *See*—
Kanai, Kenji; Kaminaka, Nobuyuki; Nomura, Noboru; and Nouchi, Norimoto, 4,353,102, Cl. 360-126.000.
Novak, Frank A.: *See*—
Gorgone, Robert L.; Kovach, Alan J.; and Novak, Frank A., 4,352,559, Cl. 356-71.000.
Nowak, Franz: *See*—
Buchs, Wolfgang; Nowak, Franz; and Woerndle, Rudolf, 4,352,631, Cl. 416-134.00A.
Nowak, Frederick H.; and Bittar, Joseph, to Otis Elevator Company. Elevator floor cutoff. 4,352,411, Cl. 187-29.00R.
Nowak, Frederick H.: *See*—
Bittar, Joseph; and Nowak, Frederick H., 4,352,410, Cl. 187-29.00R.
Bittar, Joseph; and Nowak, Frederick H., 4,352,412, Cl. 187-29.00R.
Noyes, Robert M.; and Voeller, Roger W., to Procter & Gamble Company, The. Coffee extraction process. 4,352,829, Cl. 426-387.000.
Ny, Nils O., to RCA Corporation. Musical keyboard for home computer. 4,352,313, Cl. 84-425.000.
Nylen, Ulf T. G., to Gambro AB. Apparatus for diluting a concentrated solution. 4,352,374, Cl. 137-564.500.
Oak Industries, Inc.: *See*—
den Toonder, Pieter; and Fondse, Pieter J., 4,353,088, Cl. 358-120.000.
O'Brien, Larry, to Leco Corporation. Combustion system. 4,352,781, Cl. 422-78.000.
Occidental Research Corporation: *See*—
Moudgil, Brij M.; and Roeschlaub, John G., 4,352,731, Cl. 209-9.000.
Ocera, Girolamo: *See*—
D'Oro, Enzo C.; and Ocera, Girolamo, 4,353,042, Cl. 333-24.100.
Ogata, Masami; Yoshihara, Motoshi; and Tada, Masahira, to Nishiyodo Air Conditioner Co., Ltd. Apparatus for producing a finned tube for heat transfer. 4,352,227, Cl. 29-33.00F.
Ogata, Masatsugu; Takasaki, Hirokazu; Nemoto, Masanori; Narahara, Toshikazu; Hironaka, Kenichi; and Ishikawa, Tetuo, to Hitachi, Ltd. Resin molded stators. 4,352,897, Cl. 523-220.000.
Ogata, Minoru: *See*—
Takeda, Takashi; Ogata, Minoru; and Kurabayashi, Sadasuke, 4,353,097, Cl. 358-287.000.
Ogawa, Masasi: *See*—
Toda, Yuzo; Koizumi, Junji; Ogawa, Masasi; Sera, Hidefumi; and Kubodera, Seiiti, 4,352,873, Cl. 430-545.000.
Ogusu, Chihaya: *See*—
Taketoshi, Kazuhisa; and Ogusu, Chihaya, 4,352,834, Cl. 427-38.000.
Ohara, Yuji, to Fuji Photo Film Co., Ltd. Light beam scanning device. 4,352,984, Cl. 250-234.000.
Ohashi, Toshio: *See*—
Shimada, Yukio; Suzuki, Naoyoshi; Ohashi, Toshio; and Inoshita, Yasushi, 4,352,452, Cl. 236-13.000.
Ohata, Yasufumi: *See*—
Uchikawa, Fusaoki; Tanaka, Hideharu; Sekiya, Mutsuo; and Ohata, Yasufumi, 4,352,853, Cl. 428-304.400.
Ohkawa, Takehisa: *See*—
Yoda, Kuniichi; Ohkawa, Takehisa; and Azegami, Hitoshi, 4,352,859, Cl. 428-425.900.
Ohkawa, Tihiro, to General Atomic Company. Integrated photovoltaic electrolytic cell. 4,352,722, Cl. 204-129.000.
Ohshima, Ken: *See*—
Satoh, Ken; Watanabe, Seizo; Saitou, Sinichi; Kato, Toshikazu; Ohshima, Ken; Shibata, Tsutomu; and Kimura, Kenji, 4,352,473, Cl. 242-199.000.
Ohta, Sumio: *See*—
Kono, Hisashi; Terai, Kenji; Hisadomi, Masaki; Uemura, Katumi; Ohta, Sumio; and Yamamoto, Yoshiichi, 4,352,923, Cl. 528-233.000.

Ojima, Iwao; and Suga, Shigemi, to Sagami Chemical Research Center. Process for the preparation of dipeptides. 4,352,752, Cl. 260-112.50R.

Oka, Hiroyuki: *See—*
Suzuki, Shigeo; Kakuta, Atsushi; Oka, Hiroyuki; Mori, Yasuki; and Morishita, Hirosada, 4,352,876, Cl. 430-58.000.

Oka, Joji: *See—*
Tada, Fusao; Itoh, Takeshi; Oka, Joji; and Okamoto, Akira, 4,352,899, Cl. 523-451.000.

Okabe, Yoichi: *See—*
Sugano, Takuo; Niki, Eiji; Okabe, Yoichi; and Akiyama, Tatsuo, 4,352,726, Cl. 204-195.00M.

Okada, Seiji: *See—*
Narusawa, Toshiaki; Okada, Seiji; Muramatsu, Kiyohide; Yagishita, Teruo; and Okuyama, Hirohumi, 4,352,877, Cl. 430-97.000.

Okamoto, Akira: *See—*
Tada, Fusao; Itoh, Takeshi; Oka, Joji; and Okamoto, Akira, 4,352,899, Cl. 523-451.000.

Oki Electric Industry Co., Ltd.: *See—*
Takayuki, Tanaka, 4,353,104, Cl. 361-91.000.

Okiyama, Toshiaki, to Fuji Photo Film Co., Ltd. Transfer film for use in electrophotographic copiers. 4,352,847, Cl. 428-141.000.

Okuyama, Hirohumi: *See—*
Narusawa, Toshiaki; Okada, Seiji; Muramatsu, Kiyohide; Yagishita, Teruo; and Okuyama, Hirohumi, 4,352,877, Cl. 430-97.000.

Olin Corporation: *See—*
Katz, Lawrence E.; and Gay, Walter A., 4,352,806, Cl. 424-251.000.

Oliver, John E., Jr.; and Lott, W. Gerald. Completion and workover fluid filtration system. 4,352,739, Cl. 210-739.000.

Olschewski, Armin; Brandenstein, Manfred; and Walter, Lothar, to SKF Kugellagerfabriken GmbH. Self centering clutch thrust bearing. 4,352,419, Cl. 192-98.000.

Olson, Daniel R.; Griffing, Bruce F.; and Norton, James F., to General Electric Company. Method of forming a layer of polymethyl methacrylate on a surface of silicon dioxide. 4,352,839, Cl. 427-240.000.

Olson, Lloyd C.: *See—*
Cornelius, Gail; and Olson, Lloyd C., 4,352,464, Cl. 239-713.000.

Olsson, Alvar; and Giacomelli, Peter, to Tetra Pak Developpement SA. Arrangement for the oriented feeding out of caps. 4,352,421, Cl. 198-392.000.

Olympus Optical Co., Ltd.: *See—*
Imai, Toshihiro, 4,352,544, Cl. 350-464.000.
Satoh, Ken; Watanabe, Seizo; Saitou, Sinichi; Kato, Toshikazu; Ohshima, Ken; Shibata, Tsutomu; and Kimura, Kenji, 4,352,473, Cl. 242-199.000.

Ong, DeWitt G.: *See—*
Davis, Paul C.; Jackson, Raymond G.; Nahas, Joseph J.; Nelson, Dale H.; Ong, DeWitt G.; and Wittman, Brian A., 4,352,958, Cl. 179-84.0VF.

Onizawa, Takashi: *See—*
Matsui, Hiroshi; Nishioka, Matsuo; and Onizawa, Takashi, 4,353,053, Cl. 338-184.000.

Ono Sokki Co., Ltd.: *See—*
Maehara, Osamu; and Sasaki, Tooru, 4,352,295, Cl. 73-862.340.

Onopchenko, Anatoli; Sabourin, Edward T.; and Selwitz, Charles M., to Gulf Research & Development Company. Purification process. 4,352,942, Cl. 568-306.000.

Optilon W. Erich Heilmann GmbH: *See—*
Heimberger, Helmut, 4,352,654, Cl. 425-545.000.

Orban, John N.: *See—*
Bettinger, George E.; and Orban, John N., 4,352,744, Cl. 252-313.00S.

Orima, Hajime, to Firster Corporation Limited. Shock absorbing device. 4,352,514, Cl. 293-110.000.

Orion Industries, Inc.: *See—*
Aro, Ernesto M., 4,352,519, Cl. 296-97.00G.

Orlandoni, Franco. Portable keyboard musical instrument. 4,352,310, Cl. 84-1.010.

O'Rourke, Peter W. Water bed base. 4,352,217, Cl. 5-451.000.

Orsino, Joseph A.; Sawyer, Ernest R.; and Hollet, Ronald J., to Concorde Battery Corp. Nonspill vented closure assembly for storage battery. 4,352,364, Cl. 137-43.000.

Orta, Phillip N.; and Spector, George. Hand signals. 4,352,461, Cl. 239-211.000.

Orth, Heinz W.; and Sloot, James W., to Dresser Industries, Inc. Rotational viscometer. 4,352,287, Cl. 73-60.000.

Osaka Chemical Laboratory Co., Ltd.: *See—*
Arichi, Shigeru; and Uchida, Yoshihiro, 4,352,796, Cl. 424-195.000.

Osano, Hisashi; and Morozumi, Takuro, to Fuji Jukogyo Kabushiki Kaisha; and Nissan Motor Co., Ltd. Electronic control system for a carburetor. 4,352,346, Cl. 123-440.000.

Osano, Hisashi; and Morozumi, Takuro, to Fuji Jukogyo Kabushiki Kaisha; and Nissan Motor Co., Ltd. Electronic control system for a carburetor. 4,352,347, Cl. 123-440.000.

Osegowitsch, Viktor: *See—*
Hammer, Thomas; Hehn, Wilfried; Kocourek, Franz; Sieber, Werner; and Osegowitsch, Viktor, 4,352,448, Cl. 226-108.000.

Oshitani, Akiyoshi: *See—*
Murase, Teruo; Kawano, Kyoichiro; and Oshitani, Akiyoshi, 4,352,533, Cl. 339-17.00L.

Oswalt, William L. Livestock identification system. 4,352,253, Cl. 40-300.000.

Ota, Akiho: *See—*
Yoshino, Yataro; Ota, Akiho; and Sugiura, Hiroaki, 4,352,435, Cl. 215-1.00C.

Otis Elevator Company: *See—*
Bittar, Joseph; and Nowak, Frederick H., 4,352,410, Cl. 187-29.00R.
Bittar, Joseph; and Nowak, Frederick H., 4,352,412, Cl. 187-29.00R.
Nowak, Frederick H.; and Bittar, Joseph, 4,352,411, Cl. 187-29.00R.

Otis Engineering Corporation: *See—*
Fisher, Ernest P., Jr., 4,352,366, Cl. 137-71.000.

Ott, Lothar; and Gessner, Dieter, to tpT Machinery Corporation. Clamping device for molds used in the blow molding of hollow plastic articles. 4,352,653, Cl. 425-541.000.

Ott, Louis E., to Standard Oil Company (Indiana). Nitrogen fertilizers. 4,352,688, Cl. 71-11.000.

Otto Hansel GmbH: *See—*
Hansel, Otto; Lesch, Hans; and Lesch, Hans-Bernd, 4,352,265, Cl. 53-541.000.

Outboard Marine Corporation: *See—*
Lloyd, Ronald B.; and Wick, Gerald H., 4,352,266, Cl. 56-11.300.
McAuliffe, Gerald N.; and Pearce, Richard E., 4,352,302, Cl. 74-474.000.
McGowan, Philip J., 4,352,666, Cl. 440-53.000.

Owatari, Akio; and Yamada, Yuki, to Shinshu Seiki Kabushiki Kaisha. Liquid ink for printers. 4,352,691, Cl. 106-20.000.

Owatonna Tool Company: *See—*
Landrum, Michael T.; and Anderson, Terrance M., 4,352,644, Cl. 417-402.000.

Owen, James G.; and Grimes, John M., to Fieldcrest Mills, Inc. Decorative sheeting fabric. 4,352,380, Cl. 139-426.00R.

Owens-Corning Fiberglas Corporation: *See—*
Crosby, E. Eugene, 4,352,686, Cl. 65-15.000.

Oyamada, Tugio; Suzuki, Kenichi; Kishi, Toshikazu; and Shibato, Eizo, to Hitachi, Ltd. Pipe welding apparatus. 4,352,975, Cl. 219-125.110.

Ozaki, Kiyotaka; Matsui, Michikage; and Minemura, Norihiro, to Teijin Limited. Process for the preparation of leatherlike sheet materials. 4,352,705, Cl. 156-155.000.

Ozawa, Takashi, to Rank Xerox Limited. Electrophotographic copying method and apparatus. 4,352,549, Cl. 355-3.00R.

Ozer, Theodore: *See—*
Yankovoy, Alexander; and Ozer, Theodore, 4,352,610, Cl. 408-1.00R.

P.O.P. Displays, Inc.: *See—*
Loew, Jonathan A., 4,352,478, Cl. 248-221.300.

Paap, Hans J.; Meador, Richard A.; and Arnold, Dan M., to Texaco Inc. Measurement of salt content in petroleum flow lines. 4,352,288, Cl. 73-61.00R.

Palfalvi, Gyorgy: *See—*
Bergmann, Gyorgy; Horvath, Mihaly; Palfalvi, Gyorgy; Tomcsanyi, Gabor; Kovacs, Gyula; and Laszlo, Kardy, 4,352,378, Cl. 138-38.000.

Palmers, Hilbert; and Chermin, Hubertus M. J., to U.S. Philips Corporation. Direct current to alternating current converter. 4,353,116, Cl. 363-133.000.

Pandolfe, William D., to Gaulin Corporation. Homogenizing method. 4,352,573, Cl. 366-176.000.

Parat, Hubert J. L.; Michel, Dominique; and Sedillot, Francois G., to Compagnie Generale pour les Developpements Operationnels des Richesses Sous-Marines "C.G. Doris". Concrete structure for the transmission of loads from the steel lattice of a marine platform and a method of forming said structure. 4,352,598, Cl. 405-222.000.

Park, Timothy A.; and Turner, Brian C., to Ano-Coil Limited. Process for applying designs to aluminum strip. 4,352,721, Cl. 204-35.00N.

Parker, William R.; and Kirby, Robert. Stabilization of erodible marine or fluviatile sediments. 4,352,590, Cl. 405-17.000.

Parks, Robert E., to Antek Instruments, Inc. Chemiluminescent sulfur detection apparatus and method. 4,352,779, Cl. 422-52.000.

Parlebas, Gerard G.; and Lebars-Parlebas, Solange. Device for mounting closures on door panels. 4,352,279, Cl. 70-451.000.

Parnell, John V.: *See—*
Wood, Robert W.; Parnell, John V.; and Hoefler, Andrew C., 4,352,832, Cl. 426-589.000.

Parravicini, Roberto. Cardiac valve prosthesis. 4,352,211, Cl. 3-1.500.

Pascucci, Vito S.; and Aiello, Elmer J., to G. Leblanc Corporation. Reed holder. 4,352,428, Cl. 206-314.000.

Passler, Michael; Tecl, Bohuslav; and Schumacher, Rolf, to Carl Freudenberg, Firma. Cleaning cloth. 4,352,846, Cl. 428-105.000.

Pataki, Arpad: *See—*
Cser, Gyula; and Pataki, Arpad, 4,352,342, Cl. 123-41.540.

Patel, Mahesh S.: *See—*
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Paton, H. Neil; Gylland, E. Frederick, Jr.; Sandys, Jeffrey P.; and Skilling, John B., to Paton, H. Neil; and Skilling, John B. Damped rubber tired vehicle suspension. 4,352,509, Cl. 280-716.000.

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Patterson, Williams G.; Rochkind, Allen B.; Miller, Leslie A.; and Bradley, Martin P. T., to Spectra-Physics, Inc. Dual piston pump. 4,352,636, Cl. 417-22.000.

Patton, Tad L., to Exxon Research & Engineering Co. Polymers characterized by 1,3-imidazolidine-1,3-diyl rings plasticized with diaryl ketones. 4,352,905, Cl. 524-359.000.

Paucot, Andre, to Solvay & Cie. (Societe Anonyme). Chlorobromodicarboxylic acids and processes for their manufacture and their use. 4,352,939, Cl. 560-120.000.

Paul Forkardt Kommanditgesellschaft: *See—*
Blattry, Hans; and Antoni, Herbert, 4,352,500, Cl. 279-121.000.
Paul, William A. Apparatus for applying gasket-forming material to workpieces. 4,352,712, Cl. 156-540.000.
Paulet, Jacques: *See—*
Espitalie, Jean; Madec, Marcel; Leplat, Paul; and Paulet, Jacques, 4,352,673, Cl. 23-230.0EP.
PCUK Produits Chimiques Ugine Kuhlmann: *See—*
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Pearcey, Dale A.: *See—*
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Pearcey, Leroy G.; and Pearcey, Dale A. Underground house and construction method. 4,352,260, Cl. 52-80.000.
Pearline, Donald I.; Corbin, Edgar A., Jr.; and Garner, Marvin A., to Mallinckrodt International Corp. Process for preparing acid cheese curd. 4,352,826, Cl. 426-39.000.
Pease Company: *See—*
Bursk, William M.; and Doll, Jacob G., 4,352,258, Cl. 49-468.000.
Pelczyk, Alan; Purssell, Robert F.; Woollard, Alfred J.; Fowler, Albert L.; Walker, David M.; Henderson, Alan G.; and Stevenson, Alastair K., to Ranco Incorporated. Displacement measuring transducer. 4,353,050, Cl. 336-30.000.
Pendleton, Robert G.: *See—*
Bondinell, William E.; DeMarinis, Robert M.; Hieble, Jacob P.; and Pendleton, Robert G., 4,352,809, Cl. 424-258.000.
Pennsylvania Engineering Corp.: *See—*
Hixenbaugh, Dennis L., 4,352,486, Cl. 266-99.000.
Perkin-Elmer Corporation, The: *See—*
Berry, Daniel G.; and Markle, David A., 4,353,087, Cl. 358-101.000.
Perodjon, Jean, to Commissariat a l'Energie Atomique. Optical system for scanning a part with a beam and especially an ultrasonic or electromagnetic beam. 4,352,294, Cl. 73-642.000.
Perrella, Guido, to DBM Industries Limited. Die vent for mold cavities. 4,352,388, Cl. 164-305.000.
Perron, Reginald F., to Hubscher Ribbon Corporation Limited. Free-spinning embossers. 4,352,703, Cl. 156-88.000.
Persson, Torsten B.: *See—*
Jacobsen, Edmond M.; Nielsen, Otto V.; and Persson, Torsten B., 4,352,649, Cl. 425-83.100.
Perstorp AB: *See—*
Johansson, Olof J. A.; and Ulmsten, Ulf I., 4,352,790, Cl. 424-78.000.
Peter, Kurt; and Muck, Gerhard. Cartridge package for rapid loading of a magazine or clip for automatic and semiautomatic weapons. 4,352,254, Cl. 42-88.000.
Petersen, Godber, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Sheet folding apparatus for use with continuous web printing machine. 4,352,671, Cl. 493-424.000.
Peterson, John J.: *See—*
Shum, Edward K.; and Peterson, John J., 4,353,099, Cl. 360-27.000.
Peterson, Russell I., Jr., to Conair, Inc. Auger feed device. 4,352,426, Cl. 198-657.000.
Petke, Frederick D.; Sublett, Bobby J.; and McConnell, Richard L., to Eastman Kodak Company. Heat resistant copolyester adhesives. 4,352,925, Cl. 528-309.000.
Pfeifer, Robert F.: *See—*
Boone, Charles A.; and Pfeifer, Robert F., 4,352,952, Cl. 178-22.090.
Pfeiler, Manfred, to Siemens Aktiengesellschaft. Tomographic apparatus for the production of transverse layer images. 4,352,986, Cl. 378-14.000.
Pfizer Inc.: *See—*
Welch, Willard M.; and Harbert, Charles A., 4,352,807, Cl. 424-256.000.
Wernau, William C., 4,352,741, Cl. 252-8.55D.
Pharr, David M.: *See—*
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Phillipps, Gordon H.; Humber, David C.; Ewan, George B.; and Coomber, Barry A., to Glaxo Group Limited. 11 α-Amino-androstanes. 4,352,798, Cl. 424-242.000.
Phillips Petroleum Company: *See—*
Naylor, Floyd E., 4,352,912, Cl. 525-314.000.
Siedenstrang, Roy W.; and Thorsrud, Agmund K., 4,352,854, Cl. 428-318.800.
Piaggio & C. S.p.A.: *See—*
Batoni, Giovanni, 4,352,343, Cl. 123-51.0BA.
Pianalto, Adriano, to Gipiemme s.r.l. Rear brake holder for bicycles. 4,352,504, Cl. 280-281.00R.
Piccioni, Gino: *See—*
Inzoli, Luciano; and Piccioni, Gino, 4,352,994, Cl. 307-149.000.
Pickens, George O., to United States of America, Navy. Low-frequency sound source for towed array condition appraiser system (TACAS). 4,353,120, Cl. 367-13.000.
Pierce, John M., to Fairchild Camera and Instrument. Process for suppressing electromigration in conducting lines formed on integrated circuits by control of crystalline boundary orientation. 4,352,239, Cl. 29-590.000.
Pierre, Gallet G. Multi-responder telephone intercept apparatus. 4,352,956, Cl. 179-6.040.
Pike, Russell E.: *See—*
Rane, Dinanath F.; Wright, John J.; and Pike, Russell E., 4,352,808, Cl. 424-258.000.
Pillis, Lewis J.; and Davis, Lois T., to Sybron Corporation. Process for treating wastewater containing phenolics and microorganism capable of degrading phenolics. 4,352,886, Cl. 435-262.000.
Pitre, Davide: *See—*
Felder, Ernst; and Pitre, Davide, 4,352,788, Cl. 424-5.000.
Plaga, Kurt, to Bochumer Eisenhuette Heintzmann GmbH & Co. Roof support for a mine gallery which extends at a relatively large angle inclined to the horizontal. 4,352,602, Cl. 405-291.000.
Plastics Engineering Company: *See—*
Lee, Chung J., 4,352,907, Cl. 524-537.000.
Plessey Handel und Investments AG: *See—*
Richardson, Christopher K., 4,353,127, Cl. 370-32.000.
Plessey Overseas Limited: *See—*
Galpin, Robert K., 4,352,999, Cl. 307-354.000.
Plessey Peripheral Systems: *See—*
Veale, John R., 4,353,020, Cl. 318-601.000.
Plet, Catherine. Apparatus for producing a skewered stack of food. 4,352,242, Cl. 30-130.000.
Pleus, Edwin F. Apparatus for processing whole beets. 4,352,325, Cl. 99-483.000.
Poduje, Noel S.: *See—*
Abbe, Robert C.; and Poduje, Noel S., 4,353,029, Cl. 324-236.000.
Polaroid Corporation: *See—*
Land, Edwin H.; and Walworth, Vivian K., 4,352,874, Cl. 430-568.000.
Taylor, Lloyd D.; and Schwarzel, William C., 4,352,871, Cl. 430-505.000.
Polensky & Zollner: *See—*
Wittfoht, Hans, 4,352,220, Cl. 14-1.000.
Pollman, Frederic W., to Sundstrand Corporation. Electro-hydraulic control structure. 4,352,367, Cl. 137-82.000.
Pompes Essa Mico: *See—*
Duveau, Francois, 4,352,298, Cl. 74-84.00R.
Poock, Darwin N., to FMC Corporation. Pendant supported hydraulic extensible boom. 4,352,434, Cl. 212-186.000.
Popp, Franz: *See—*
Leibhard, Erich; Richter, Hanno; Lang, Gusztav; Popp, Franz; and Goellnitz, Heinz, 4,352,442, Cl. 222-146.0HE.
Post, James R.: *See—*
Edelmann, Frank E.; and Post, James R., 4,352,262, Cl. 52-744.000.
Pounds, Walter R., to KB Denver, Inc. Elastomeric boot for a keyboard subassembly. 4,352,968, Cl. 200-302.000.
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PPG Industries, Inc.: *See—*
Bonaddio, Robert M.; and Dahlberg, John R., 4,352,447, Cl. 225-2.000.
Prather, Richard A., to Upjohn Company, The. Process and composition. 4,352,696, Cl. 106-163.00R.
Precision Data, Inc.: *See—*
Shum, Edward K.; and Peterson, John J., 4,353,099, Cl. 360-27.000.
Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., to Gulf Research & Development Company. Process for producing ethanol. 4,352,946, Cl. 568-902.000.
Pretzer, Wayne R.: *See—*
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Preuhs, Hans-Jurgen: *See—*
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Pridgen, Lendon N.: *See—*
Lam, Bing L.; and Pridgen, Lendon N., 4,352,933, Cl. 544-320.000.
Priebe, Durward H.: *See—*
English, Jack A.; Greve, James E.; Hufford, James N.; and Priebe, Durward H., 4,352,966, Cl. 200-16.00D.
Prince Corporation: *See—*
Prince, Edgar D.; and Marcus, Konrad H., 4,352,518, Cl. 296-97.00H.
Prince, Edgar D.; and Marcus, Konrad H., to Prince Corporation. Visor. 4,352,518, Cl. 296-97.00H.
Pring, Peter: *See—*
Erpenbach, Heinz; Gehrmann, Klaus; Lork, Winfried; and Pring, Peter, 4,352,761, Cl. 260-544.00A.
Printing Machinery & Electronics Corporation, Inc.: *See—*
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Pritchard, Dalton H.: *See—*
Durbin, Jesse, Jr.; and Pritchard, Dalton H., 4,353,093, Cl. 358-160.000.
Procter & Gamble Company, The: *See—*
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Produits Chimiques de la Montagne Noire: *See—*
Combes, Claude; Arnaudis, Jean; Arnaudis, Germaine; and Marcou, Lucien, 4,352,812, Cl. 424-273.00R.
Proud, Joseph M.: *See—*
Fallier, Charles N., Jr.; and Proud, Joseph M., 4,353,012, Cl. 315-289.000.
Provi, Michael A., to Dasco Products, Inc. Tool head and handle interconnection. 4,352,381, Cl. 145-2.00R.
Prussin, Samuel: *See—*
Young, Robert W.; Prussin, Samuel; and Gaylord, Norman G., 4,352,833, Cl. 427-4.000.
Puglia, Wayne J.; Kehoe, Gary; Witzel, Frank; Clark, K. Warren; and Mackay, Donald A. M., to Nabisco Brands, Inc. Chewing gum containing fatty or gelatinous sweetner and method. 4,352,824, Cl. 426-5.000.

Pulawski, Casimir: *See—*
Notardonato, Luigi; Pulawski, Casimir; and Kemp, David M., 4,352,679, Cl. 55-38.000.
Purssell, Robert F.: *See—*
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Purtell, Rufus J., to Tri-Matic, Inc. Automatic furrow guide. 4,352,460, Cl. 239-184.000.
Pyee, Maurice, to Agence Nationale de Valorization de la Recherche. Broad band system operating in the submillimeter wave range. 4,353,070, Cl. 343-701.000.
Quinlan, James M., to American Cyanamid Co. Diethylcarbamazine resinate and styrlpyridinium resinate-diethylcarbamazine resinate edible anthelmintic tablets for companion animals. 4,352,891, Cl. 521-32.000.
R F Monolithics, Inc.: *See—*
Hartmann, Clinton S., 4,353,046, Cl. 333-194.000.
R. M. Wade & Co.: *See—*
Cornelius, Gail; and Olson, Lloyd C., 4,352,464, Cl. 239-713.000.
Racek, Alfred. Gas lighter. 4,352,658, Cl. 431-254.000.
Racz, Janos A.: *See—*
Dinwiddie, Kendall L.; Racz, Janos A.; and Seppi, Edward J., 4,352,530, Cl. 339-5.00M.
Ragettli, Christian. Method and apparatus for bending pipes. 4,352,281, Cl. 72-131.000.
Ralston Purina Company: *See—*
Krinski, Thomas L.; and Garey, Carroll L., 4,352,692, Cl. 106-79.000.
Ranco Incorporated: *See—*
Pelczyk, Alan; Purssell, Robert F.; Woollard, Alfred J.; Fowler, Albert L.; Walker, David M.; Henderson, Alan G.; and Stevenson, Alastair K., 4,353,050, Cl. 336-30.000.
Rane, Dinanath F.; Wright, John J.; and Pike, Russell E., to Schering Corporation. 3-Aralkyloxy-2,3-dihydro-2-(imidazolylmethyl)benzo(b)thiophenes and related derivatives, their use as antimicrobials and pharmaceutical formulations useful therefore. 4,352,808, Cl. 424-258.000.
Rank Xerox Limited: *See—*
Ozawa, Takashi, 4,352,549, Cl. 355-3.00R.
Raudenbusch, Werner T.: *See—*
Kooymans, Petrus G.; Wintraecken, Johannes J. M. H.; Raudenbusch, Werner T.; Seelen-Kruijssen, Josepha M. E.; and Schreurs, Gerardus C. M., 4,352,842, Cl. 427-385.500.
Ray, Clifford H.; and Moore, Neil A., to Fairfield Industries, Inc. High resolution, marine seismic stratigraphic system. 4,353,121, Cl. 367-21.000.
Raymond, Joseph H., Jr.; and Gudger, Keith H., to Texas Instruments Incorporated. Static MOS memory cell using inverted N-channel field-effect transistor. 4,352,997, Cl. 307-279.000.
Raytheon Company: *See—*
Monser, George J., 4,353,072, Cl. 343-725.000.
Monser, George J.; and Roy, Albert A., 4,353,074, Cl. 343-786.000.
RCA Corporation: *See—*
Durbin, Jesse, Jr.; and Pritchard, Dalton H., 4,353,093, Cl. 358-160.000.
Hoover, Merle V., 4,353,036, Cl. 330-264.000.
Kimbrough, Laurence B.; and Wilbur, Leonard P., 4,352,226, Cl. 29-25.190.
Ny, Nils O., 4,352,313, Cl. 84-425.000.
Roach, William R., 4,352,564, Cl. 356-354.000.
Robinson, John W.; and Kaganowicz, Grzegorz, 4,352,836, Cl. 427-39.000.
Schade, Horst E. P., 4,353,006, Cl. 313-457.000.
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Rederiaktiebolaget Nordstjernan: *See—*
Jonsson, Kurt A., 4,352,391, Cl. 165-1.000.
Reece, Jack E., to Minnesota Mining and Manufacturing Company. Stabilization of latent images in photothermographic elements. 4,352,872, Cl. 430-523.000.
Reed, David A.: *See—*
Jones, Robert A.; and Reed, David A., 4,352,678, Cl. 51-307.000.
Reed, Weldon N.; and Galvin, Thomas J., to ICI Americas Inc. Blister resistant calcium carbonate filled polyisocyanurate resin molding compositions. 4,352,906, Cl. 524-426.000.
Regency Electronics, Inc.: *See—*
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Rehacek, Josef: *See—*
Bracco, Umberto; Viret, Jean-Louis; and Rehacek, Josef, 4,352,746, Cl. 252-398.000.
Reid, Lola C. M.; and Rojkind, Marcos, to Albert Einstein College of Medicine of Yeshiva University. Method and article for culturing differentiated cells. 4,352,887, Cl. 435-240.000.
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Baker, Richard H.; and Semanchik, Bruce D., 4,352,998, Cl. 307-311.000.
LaMothe, Hilary, 4,352,962, Cl. 179-170.00R.
Renes, Harrie: *See—*
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Renson, Marcel; Etschenberg, Eugen; and Winkelmann, Johannes, to A. Nattermann & Cie GmbH. 2-Phenyl-1,2-benzisoselenazol-3(2H)-one containing pharmaceutical preparations and process for the treatment of rheumatic diseases. 4,352,799, Cl. 424-244.000.
Revells, Robert G.; and Eggert, John N., to Libbey-Owens-Ford Company. Apparatus for washing curved sheets. 4,352,221, Cl. 15-77.000.
Rhone-Poulenc Agrochimie: *See—*
Fahmy, Mohamed A., 4,352,762, Cl. 260-972.000.
Rialland, Jean P.; and Barbier, Jean P., to Bridel, Laiteries E. Cation-exchange of milk and products thereof. 4,352,828, Cl. 426-271.000.
Ribble, Franklin; and Huber, William E., to Wilkerson Corporation. Releasable clamp for modular connector. 4,352,511, Cl. 285-91.000.
Richard, Gordon L.: *See—*
Dormer, Kenneth J.; and Richard, Gordon L., 4,352,960, Cl. 179-107.0BC.
Richard, Jean P.: *See—*
Chartier, Robert M.; and Richard, Jean P., 4,352,436, Cl. 215-252.000.
Richardson, Christopher K., to Plessey Handel und Investments AG. Duplex transceiver arrangements for rebroadcast of signals. 4,353,127, Cl. 370-32.000.
Richter, Hanno: *See—*
Leibhard, Erich; Richter, Hanno; Lang, Gusztav; Popp, Franz; and Goellnitz, Heinz, 4,352,442, Cl. 222-146.0HE.
Rickabaugh, Lawrence J.: *See—*
Hall, Peter M.; Howland, Frank L.; Morabito, Joseph M.; and Rickabaugh, Lawrence J., 4,352,449, Cl. 228-123.000.
Ricoh Company, Ltd.: *See—*
Kubo, Keishi; and Kawamura, Eiichi, 4,352,860, Cl. 428-478.200.
Rieter Machine Work, Ltd.: *See—*
Graf Felix; Wirz, Armin; and Mondini, Giancarlo, 4,352,223, Cl. 19-65.0CR.
Rietveld, Jan J.; and Moreau, Alain, to U.S. Philips Corporation. Switched-mode voltage converter. 4,353,112, Cl. 363-16.000.
Riggs, Robert R.; and Hunt, Paulmer D., to Bendix Corporation, The. Intermittent motion gear apparatus. 4,352,299, Cl. 74-84.00R.
Rikagaku Kenkyusho: *See—*
Karasawa, Takashi, 4,353,033, Cl. 328-234.000.
Roach, William R., to RCA Corporation. Missing order defect detection apparatus. 4,352,564, Cl. 356-354.000.
Robert Bosch GmbH: *See—*
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Robertshaw Controls Company: *See—*
Hardin, George T., 4,352,532, Cl. 339-15.000.
Robinson, John W.; and Kaganowicz, Grzegorz, to RCA Corporation. Method for obtaining an abrasive coating. 4,352,836, Cl. 427-39.000.
Robinson, Joseph G.; Carswell, Angela M.; and Barnes, David I., to Coal Industry (Patents) Limited. Method of producing an improved poly-(amide-imide) resin by reacting a phenanthrene with formaldehyde followed by oxidizing to produce a polycarboxylated product followed by reaction with an aromatic diamine. 4,352,922, Cl. 528-232.000.
Rocco, Harold S. Insulated tire press bag well and a method therefor. 4,352,647, Cl. 425-48.000.
Rochkind, Allen B.: *See—*
Patterson, Williams G.; Rochkind, Allen B.; Miller, Leslie A.; and Bradley, Martin P. T., 4,352,636, Cl. 417-22.000.
Rock, Erich: *See—*
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Rocket Research Company: *See—*
Daly, James M., 4,352,782, Cl. 422-179.000.
Rockwell International Corporation: *See—*
Ghosh, Amit K., 4,352,280, Cl. 72-38.000.
Scott, James P., 4,352,414, Cl. 188-73.340.
Rodenbeck, Philip G., to General Electric Company. Apparatus for stripping insulation from wire. 4,352,305, Cl. 84-9.510.
Rodionov, Vladimir I.: *See—*
Venin, Igor V.; Vidershain, Tatyana V; Rodionov, Vladimir I.; Smerdov, Andrei A.; and Tabak, Viktor Y., 4,352,351, Cl. 128-1.00C.
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Rogers, William J., Jr. Method for positioning portable structures. 4,352,628, Cl. 414-786.000.
Rohde, Norbert-Josef. Square level for drawing angles and parallels. 4,352,247, Cl. 33-428.000.
Rojkind, Marcos: *See—*
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Rose, Boyd W., to FMC Corporation. Fruit dryer. 4,352,249, Cl. 34-212.000.
Rose, Richard A.; Gehrke, James K.; Goedken, Terrance J.; and Vilmur, Roger, to Motorola, Inc. Wideband, synthesizer switched element voltage controlled oscillator. 4,353,038, Cl. 331-36.00C.
Rosenlind, K. Goran; and Brandberg, S. B. Thomas, to Svenska Streck Aktiebolag. Tube key. 4,352,441, Cl. 222-99.000.
Rosso, John R.: *See—*
Valiga, Richard E.; and Rosso, John R., 4,352,601, Cl. 405-270.000.
Rost, Helmut; and Walz, Alfred, to Siemens Aktiengesellschaft. Ultrasonic transmitter. 4,353,123, Cl. 367-137.000.
Rowe, James M.; and Modster, Rudolph W. Speckle pattern interferometer. 4,352,565, Cl. 356-360.000.
Roy, Albert A.: *See—*
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Roy, Raymond L.: *See—*
Cherukuri, Subraman R.; Roy, Raymond L.; Friello, Dominick R.; and Wolf, Stephen H., 4,352,823, Cl. 426-5.000.
Cherukuri, Subraman R.; Roy, Raymond L.; Friello, Dominick R.; and Wolf, Stephen H., 4,352,825, Cl. 426-5.000.

Ruble, Ray; and Treitel, Werner S., to Litton Systems, Inc. Apparatus for synthesizing a sinusoidal output. 4,353,115, Cl. 363-42.000.
RUD-Kettenfabrik Rieger & Dietz GmbH u. Co.: *See*—
Weidler, Erhard A., 4,352,382, Cl. 152-189.000.
Ruether, Peter G., to Storage Technology Corporation. Speech detector circuit with associated gain control for a tasi system. 4,352,957, Cl. 179-15.00C.
Ruhl, Rolf: *See*—
Schneider, Franz; and Ruhl, Rolf, 4,352,627, Cl. 414-752.000.
Ruhrkohle Aktiengesellschaft: *See*—
Seipenbusch, Jurgen; and Dohren, Hans, 4,352,675, Cl. 48-73.000.
Rumolo, Thomas R.: *See*—
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Ruschek, Gerhard: *See*—
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S&C Electric Company: *See*—
Bernatt, Joseph, 4,352,437, Cl. 220-89.00A.
S. Eisenberg & Co., Division of Creative Industries, Inc.: *See*—
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Saba, Michael P.: *See*—
Kinsell, Robert C.; Saba, Michael P.; and Strang, James E., 4,352,273, Cl. 62-87.000.
Sabourin, Edward T.: *See*—
Onopchenko, Anatoli; Sabourin, Edward T.; and Selwitz, Charles M., 4,352,942, Cl. 568-306.000.
Sacks, Sidney M., to Singer Company, The. Digital to analog converter having an analog to digital converter portion for an AC operation or a DC operation. 4,353,058, Cl. 340-347.0CC.
Sagami Chemical Research Center: *See*—
Ojima, Iwao; and Suga, Shigemi, 4,352,752, Cl. 260-112.50R.
Sai, Toshiyuki: *See*—
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Saipem S.p.A: *See*—
Scodino, Ambrogio, 4,352,595, Cl. 405-158.000.
Saito, Akio: *See*—
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Saito, Kenji: *See*—
Takisawa, Yukihisa; Saito, Kenji; and Yamachika, Hiroshi, 4,352,756, Cl. 549-497.000.
Saito, Yoshihiro; Sakai, Shigeru; and Endo, Tsuneo, to Nissan Motor Company, Ltd. Support bracket. 4,352,510, Cl. 280-727.000.
Saitoh, Takeshi; Nagashima, Toshio; Hatashita, Hiroshi; and Yamamoto, Susumu, to Hitachi, Ltd. Double superheterodyne tuner. 4,353,132, Cl. 455-315.000.
Saitou, Sinichi: *See*—
Satoh, Ken; Watanabe, Seizo; Saitou, Sinichi; Kato, Toshikazu; Ohshima, Ken; Shibata, Tsutomu; and Kimura, Kenji, 4,352,473, Cl. 242-199.000.
Sakai Chemical Industry Co., Ltd.: *See*—
Tada, Fusao; Itoh, Takeshi; Oka, Joji; and Okamoto, Akira, 4,352,899, Cl. 523-451.000.
Sakai, Kiyotoshi. Blast furnace installations. 4,352,619, Cl. 414-174.000.
Sakai, Masao; and Nishida, Takayuki, to Murata Kikai Kabushiki Kaisha. Bucket stacking and conveying apparatus. 4,352,617, Cl. 414-95.000.
Sakai, Masayuki: *See*—
Nakatani, Yoshihiko; Sakai, Masayuki; Nakatani, Seiichi; and Matsuoka, Michio, 4,352,286, Cl. 73-23.000.
Sakai, Shigeru: *See*—
Saito, Yoshihiro; Sakai, Shigeru; and Endo, Tsuneo, 4,352,510, Cl. 280-727.000.
Sakharnov, Vasily A.: *See*—
Lebedev, Vladimir K.; Kuchuk-Yatsenko, Sergei I.; Krivenko, Valery G.; Bogorsky, Mikhail V.; Cherednichok, Vitaly T.; Toldin, Anatoly A.; and Sakharnov, Vasily A., 4,352,972, Cl. 219-100.000.
Sakurai, Hidekazu, to Nippon Electric Co., Ltd. Digital facsimile system to band-compress half-tone picture signals. 4,353,096, Cl. 358-263.000.
Sakurai, Junji, to Fujitsu Limited. Integrated semiconductor device having insulated gate field effect transistors with a buried insulating film. 4,353,085, Cl. 357-42.000.
Saleh, Mustafa Y., to Siemens Corporation. DC/DC Converter. 4,353,114, Cl. 363-21.000.
Salmela, Erkki; and Kulo, Vaino, to Asko-Uop Oy. Method of heating an end of a length of plastic pipe and a circulating air furnace for carrying out the method. 4,352,659, Cl. 432-10.000.
Salvatore, Amedeo: *See*—
De Filippis, Pietro; Salvatore, Amedeo; and Abbondandolo, Luigi, 4,352,963, Cl. 200-5.00A.
Samanta, Shyam K.; Subramanian, Krishnamoorthy; Ezis, Andre; and Moskowitz, David, to Ford Motor Company. Method of cutting cast iron with Si_3N_4 composite cutting tool material. 4,352,308, Cl. 82-1.00C.
Sando Iron Works Co., Ltd.: *See*—
Sando, Yoshikazu; Ishidoshiro, Hiroshi; and Nakano, Eiichi, 4,352,277, Cl. 68-175.000.
Sando, Yoshikazu; Ishidoshiro, Hiroshi; and Nakano, Eiichi, to Sando Iron Works Co., Ltd. Apparatus for applying a treating solution to a cloth as foams continuously. 4,352,277, Cl. 68-175.000.
Sandstrom, Anders, to Scatra AB. Water-lubricated bearing construction for ship's propeller shaft. 4,352,527, Cl. 308-26.000.
Sandvik-Kosta GmbH: *See*—
Benatti, Edmo, 4,352,612, Cl. 409-233.000.
Sandys, Jeffrey P.: *See*—
Paton, H. Neil; Gylland, E. Frederick, Jr.; Sandys, Jeffrey P.; and Skilling, John B., 4,352,509, Cl. 280-716.000.
Sanitary-Dash Manufacturing Company, Inc.: *See*—
Landgarten, Gerald, 4,352,368, Cl. 137-247.450.
Sankyo Oilless Industry, Inc.: *See*—
Yamaguchi, Shinjiro, 4,352,387, Cl. 164-132.000.
Santen, Salomon, to Stork Amsterdam B.V. Conveying apparatus. 4,352,423, Cl. 198-472.000.
Sanyo Electric Co., Ltd.: *See*—
Kimoto, Yuji, 4,353,034, Cl. 329-103.000.
Sasaki, Tooru: *See*—
Maehara, Osamu; and Sasaki, Tooru, 4,352,295, Cl. 73-862.340.
Sasaya, Toshihiro, to Nippon Kogaku K.K. Focusing screen of a camera. 4,352,547, Cl. 354-200.000.
Sato, Shigeji: *See*—
Yamahira, Yoshiya; Noguchi, Takeshi; Fujioka, Keiji; Noguchi, Tetsuo; and Sato, Shigeji, 4,352,793, Cl. 424-180.000.
Satoh, Ken; Watanabe, Seizo; Saitou, Sinichi; Kato, Toshikazu; Ohshima, Ken; Shibata, Tsutomu; and Kimura, Kenji, to Olympus Optical Co., Ltd. Tape cassette. 4,352,473, Cl. 242-199.000.
Saunders, James F., to Trane Company, The. Multi-speed fan assembly. 4,352,635, Cl. 417-16.000.
Sawai Seiyaku Kabushiki Kaisha: *See*—
Kamada, Akira, 4,352,800, Cl. 424-246.000.
Sawyer, Ernest R · *See*—
Orsino, Joseph A.; Sawyer, Ernest R.; and Hollet, Ronald J., 4,352,364, Cl. 137-43.000.
Scan-Web I/S: *See*—
Jacobsen, Edmond M.; Nielsen, Otto V.; and Persson, Torsten B., 4,352,649, Cl. 425-83.100.
Scatra AB: *See*—
Sandstrom, Anders, 4,352,527, Cl. 308-26.000.
Schade, Horst E. P., to RCA Corporation. CRT with means for suppressing arcing therein. 4,353,006, Cl. 313-457.000.
Schaible, Paul M.; and Schwartz, Geraldine C., to International Business Machines Corporation. Dry etching of copper patterns. 4,352,716, Cl. 156-643.000.
Schampers, Paulus P. M.: *See*—
van Tongeren, Hendricus F. J. J.; Schampers, Paulus P. M.; Weijland, Willem P.; and Carasso, Marino G., 4,353,005, Cl. 313-371.000.
Schantz, Ronald K., to International Harvester Co. Circuit for pitch and tilt of dozer blade. 4,352,398, Cl. 172-812.000.
Schefczik, Ernst: *See*—
Lotsch, Wolfgang; Kemper, Reinhard; and Schefczik, Ernst, 4,352,932, Cl. 544-295.000.
Scheffler, Andreas: *See*—
Schmid-Schonbein, Holger; Kiesewetter, Holger; Mussler, Klaus; Myrenne, Heinz; and Scheffler, Andreas, 4,352,557, Cl. 356-39.000.
Schellin, Winfrid O. E., to Western Electric Co., Inc. Crystal grower with torque supportive collapsible pulling mechanism. 4,352,785, Cl. 422-249.000.
Schering Aktiengesellschaft: *See*—
Dettke, Manfred; and Stein, Ludwig, 4,352,690, Cl. 106-1.230.
Schering Corporation: *See*—
Rane, Dinanath F.; Wright, John J.; and Pike, Russell E., 4,352,808, Cl. 424-258.000.
Schettler, Helmut: *See*—
Krumm, Horst; Schettler, Helmut; Stahl, Rainer; and Zuhlke, Rainer, 4,353,040, Cl. 333-1.000.
Schick, Karl G., to Fiatron Systems, Inc. Device for controlled injection of fluids. 4,352,780, Cl. 422-67.000.
Schiller, Gerhard: *See*—
Warnecke, Gunter; and Schiller, Gerhard, 4,352,959, Cl. 179-90.00K.
Schlegel Corporation: *See*—
Miska, Stanley R., 4,352,845, Cl. 428-88.000.
Schleicher, Herbert: *See*—
Krampe, Dietrich; and Schleicher, Herbert, 4,353,015, Cl. 318-41.000.
Schlumberger Technology Corporation: *See*—
Cubberly, Walter E., Jr., 4,353,122, Cl. 367-25.000.
Schmid-Schonbein, Holger; Kiesewetter, Holger; Mussler, Klaus; Myrenne, Heinz; and Scheffler, Andreas, to Ernst Leitz Wetzlar GmbH. Determining a test value corresponding to blood subsidence. 4,352,557, Cl. 356-39.000.
Schmidt, Werner, to Dynamit Nobel. Stable aqueous impregnating solutions prepared from hydrolyzed alkyltrialkoxysilanes. 4,352,894, Cl. 521-91.000.
Schneider, Franz; and Ruhl, Rolf, to L. Schuler GmbH. Loading device for a press. 4,352,627, Cl. 414-752.000.
Schneider, Henri W.: *See*—
Lorteije, Jean H. J.; Warrink, Geert; and Schneider, Henri W., 4,353,062, Cl. 340-767.000.
Schockmel, Robert: *See*—
Metz, Paul; Schockmel, Robert; and Mersch, Roland, 4,352,764, Cl. 264-8.000.
Schreiber, Charles J., to Hornady Manufacturing Company. Jacketed bullet and method of manufacture. 4,352,225, Cl. 29-1.230.

Schreier, Curtis: *See*—
Kaye, Stanton; and Schreier, Curtis, 4,352,554, Cl. 355-40.000.
Schreurs, Gerardus C. M.: *See*—
Kooymans, Petrus G.; Wintraecken, Johannes J. M. H.; Raudenbusch, Werner T.; Seelen-Kruijssen, Josepha M. E.; and Schreurs, Gerardus C. M., 4,352,842, Cl. 427-385.500.
Schroder, Alexander: *See*—
Schwarz, Alois; Mautz, Karlheinz; and Schroder, Alexander, 4,352,632, Cl. 416-134.00A.
Schroder, Ernst, to Licentia Patent-Verwaltungs G.m.b.H. Circuit for compression or expansion of an electrical signal. 4,353,035, Cl. 330-126.000.
Schumacher, John B. Pin-actuated rotatable ram bar apparatus and carrier adapter. 4,352,515, Cl. 293-145.000.
Schumacher, Rolf: *See*—
Passler, Michael; Tecl, Bohuslav; and Schumacher, Rolf, 4,352,846, Cl. 428-105.000.
Schwarte, Erwin. Recovery of high purity N-acyl taurine in high yield. 4,352,759, Cl. 260-401.000.
Schwartz, Geraldine C.: *See*—
Schaible, Paul M.; and Schwartz, Geraldine C., 4,352,716, Cl. 156-643.000.
Schwarz, Alois; Mautz, Karlheinz; and Schroder, Alexander, to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung. Rotor mounting assembly for rotary wing aircraft. 4,352,632, Cl. 416-134.00A.
Schwarzel, William C.: *See*—
Taylor, Lloyd D.; and Schwarzel, William C., 4,352,871, Cl. 430-505.000.
Schwindt, Jurgen: *See*—
Kopp, Richard; Meyborg, Holger; and Schwindt, Jurgen, 4,352,896, Cl. 521-118.000.
Scodino, Ambrogio, to Saipem S.p.A. Apparatus for and method of supporting pipe suspended over depressions in the sea bed. 4,352,595, Cl. 405-158.000.
Scott, James: *See*—
Luce, David A.; and Scott, James, 4,352,311, Cl. 84-1.190.
Scott, James P., to Rockwell International Corporation. Friction pad and support for a disc brake. 4,352,414, Cl. 188-73.340.
Scurlock, James E.; and Curtis, Benson M., to Virginia Mason Research Center. Method for providing long-lasting local anesthesia and compounds and compositions therefore. 4,352,820, Cl. 424-329.000.
Seaberg, David H.: *See*—
Frisbee, Claude M.; and Seaberg, David H., 4,352,626, Cl. 414-722.000.
Sedco, Inc.: *See*—
Hammett, Dillard S., 4,352,596, Cl. 405-195.000.
Sederholm, Emma L.: *See*—
Gokey, Phillip E.; Hurlbut, Donovan W.; Sederholm, Emma L.; Terry, Angel F.; and Jewer, Alan A., 4,353,077, Cl. 346-137.000.
Sedillot, Francois G.: *See*—
Parat, Hubert J. L.; Michel, Dominique; and Sedillot, Francois G., 4,352,598, Cl. 405-222.000.
Seelen-Kruijssen, Josepha M. E.: *See*—
Kooymans, Petrus G.; Wintraecken, Johannes J. M. H.; Raudenbusch, Werner T.; Seelen-Kruijssen, Josepha M. E.; and Schreurs, Gerardus C. M., 4,352,842, Cl. 427-385.500.
Segars, Roy, Jr.: *See*—
Adelman, Robert L.; and Segars, Roy, Jr., 4,352,940, Cl. 562-607.000.
Seikosha Co., Ltd.: *See*—
Chida, Yoshinori; and Tada, Satoru, 4,352,577, Cl. 400-196.100.
Seipenbusch, Jurgen; and Dohren, Hans, to Ruhrkohle Aktiengesellschaft. Coal gasification reactor. 4,352,675, Cl. 48-73.000.
Seki, Tatsuo: *See*—
Tatematsu, Kenzou; Sugihara, Yasuhiro; Andou, Hiroyuki; Seki, Tatsuo; Dezaki, Yoshito; and Nishino, Yasukazu, 4,353,095, Cl. 358-260.000.
Sekiya, Mutsuo: *See*—
Uchikawa, Fusaoki; Tanaka, Hideharu; Sekiya, Mutsuo; and Ohata, Yasufumi, 4,352,853, Cl. 428-304.400.
Sekiya, Tetsuo: *See*—
Hiranuma, Hidetoshi; Sekiya, Tetsuo; Mizogami, Susumu; Mori, Motokuni; Hanatsuka, Mitsuo; and Kanayama, Toshiji, 4,352,928, Cl. 542-431.000.
Selwitz, Charles M.: *See*—
Onopchenko, Anatoli; Sabourin, Edward T.; and Selwitz, Charles M., 4,352,942, Cl. 568-306.000.
Semanchik, Bruce D.: *See*—
Baker, Richard H.; and Semanchik, Bruce D., 4,352,998, Cl. 307-311.000.
Seppi, Edward J.: *See*—
Dinwiddie, Kendall L.; Racz, Janos A.; and Seppi, Edward J., 4,352,530, Cl. 339-5.00M.
Sera, Hidefumi: *See*—
Toda, Yuzo; Koizumi, Junji; Ogawa, Masasi; Sera, Hidefumi; and Kubodera, Seiiti, 4,352,873, Cl. 430-545.000.
Seragnoli, Enzo, to G. D. Societa per Azioni. Machine for wrapping and batching products. 4,352,264, Cl. 53-531.000.
Seytre, Gerard: *See*—
Decroix, Jean-Yves; Seytre, Gerard; Charlot, Pierre; and Dubois, Jean-Claude, 4,353,107, Cl. 361-323.000.
Shaklee Corporation: *See*—
Doran, Mark A.; and Rumolo, Thomas R., 4,352,821, Cl. 424-361.000.
Sharp Kabushiki Kaisha: *See*—
Kobayashi, Takehiro, 4,352,248, Cl. 34-88.000.
Sharps, G. Vincent, Jr.: *See*—
Johnson, D. Emil; and Sharps, G. Vincent, Jr., 4,352,893, Cl. 521-79.000.
Shell Oil Company: *See*—
Gray, Robin T.; and De Jong, Aaldert J., 4,352,937, Cl. 549-546.000.
Kooymans, Petrus G.; Wintraecken, Johannes J. M. H.; Raudenbusch, Werner T.; Seelen-Kruijssen, Josepha M. E.; and Schreurs, Gerardus C. M., 4,352,842, Cl. 427-385.500.
Sherwood Refractories, Inc.: *See*—
Larson, David L., 4,352,390, Cl. 164-351.000.
Shibata, Tsutomu: *See*—
Satoh, Ken; Watanabe, Seizo; Saitou, Sinichi; Kato, Toshikazu; Ohshima, Ken; Shibata, Tsutomu; and Kimura, Kenji, 4,352,473, Cl. 242-199.000.
Shibato, Eizo: *See*—
Oyamada, Tugio; Suzuki, Kenichi; Kishi, Toshikazu; and Shibato, Eizo, 4,352,975, Cl. 219-125.110.
Shiiki, Zenya: *See*—
Katto, Takayuki; and Shiiki, Zenya, 4,352,910, Cl. 525-83.000.
Shimada, Yukio; Suzuki, Naoyoshi; Ohashi, Toshio; and Inoshita, Yasushi, to Nissan Motor Company, Limited. Emergency controller for an air conditioning system of an automotive vehicle. 4,352,452, Cl. 236-13.000.
Shimba, Hiroshi; Suzuki, Fumio; and Yuto, Masao, to Sumitomo Electric Industries, Ltd. Process for the production of highly expanded polyolefin insulated wires and cables. 4,352,701, Cl. 156-51.000.
Shimbo, Masafumi, to Kabushiki Kaisha Daini Seikosha. Process for fabricating a vertical static induction device. 4,352,238, Cl. 29-579.000.
Shinshu Seiki Kabushiki Kaisha: *See*—
Owatari, Akio; and Yamada, Yuki, 4,352,691, Cl. 106-20.000.
Shirai, Haruyoshi: *See*—
Ishitsuka, Hideo; Shirai, Haruyoshi; Umeda, Isao; and Suhara, Yasuji, 4,352,792, Cl. 424-180.000.
Shirakawa, Takashi, to Alps Electric Company, Ltd. Trimmer capacitor. 4,353,106, Cl. 361-293.000.
Shirouchi, Hideo: *See*—
Fukai, Kikuji; and Shirouchi, Hideo, 4,352,440, Cl. 221-178.000.
Shore, Sydney. Ribbon cartridge and adapter. 4,352,575, Cl. 400-250.000.
Shtarkman, Emile M., to Gould Inc. Viscous spring damper. 4,352,487, Cl. 267-35.000.
Shum, Edward K.; and Peterson, John J., to Precision Data, Inc. Tape-recorded signal recovery method and apparatus. 4,353,099, Cl. 360-27.000.
SI Handling Systems, Inc.: *See*—
Sleep, Craig, 4,352,327, Cl. 104-170.000.
Sieber, Werner: *See*—
Hammer, Thomas; Hehn, Wilfried; Kocourek, Franz; Sieber, Werner; and Osegowitsch, Viktor, 4,352,448, Cl. 226-108.000.
Siedenstrang, Roy W.; and Thorsrud, Agmund K., to Phillips Petroleum Company. Molded sponge-like thermoplastic elastomer articles having thin, dense skins and a process for their production. 4,352,854, Cl. 428-318.800.
Siegfried Aktiengesellschaft: *See*—
Cuny, Eckehard K. T.; Lichtenthaler, Frieder W.; and Moser, Alfred R., 4,352,931, Cl. 544-251.000.
Siemens Aktiengesellschaft: *See*—
Bergmann, Eduard, 4,353,126, Cl. 370-24.000.
Brunner, Anton; and Kress, Erwin, 4,353,073, Cl. 343-779.000.
Herbst, Heiner; and Niemeyer, Matthias, 4,353,084, Cl. 357-30.000.
Kleinschmidt, Peter, 4,353,004, Cl. 310-318.000.
Krampe, Dietrich; and Schleicher, Herbert, 4,353,015, Cl. 318-41.000.
Nossek, Josef, 4,353,044, Cl. 333-173.000.
Pfeiler, Manfred, 4,352,986, Cl. 378-14.000.
Rost, Helmut; and Walz, Alfred, 4,353,123, Cl. 367-137.000.
Widmann, Dietrich, 4,352,237, Cl. 29-577.00C.
Wille, Roger; and Meindl, Gerhard, 4,353,051, Cl. 336-192.000.
Siemens Corporation: *See*—
Saleh, Mustafa Y., 4,353,114, Cl. 363-21.000.
Tsikos, Constantine, 4,353,056, Cl. 340-146.30E.
Siemsen, Henry S., to Bowmar, Bryce. Pneumatic pump. 4,352,639, Cl. 417-134.000.
Sievers, G. Kelly, to Turbine Metal Technology, Inc. Interdispersed phase coatings method. 4,352,840, Cl. 427-252.000.
Signetics Corporation: *See*—
Anderson, Jared A.; Van Gelder, Robert V.; Yazolino, Lauren F.; and Braun, Jimmy E., 4,352,274, Cl. 62-229.000.
Silent Running Corporation: *See*—
Hannas, James R., 4,352,993, Cl. 307-112.000.
Silvestri, George J., Jr., to Westinghouse Electric Corp. Method and apparatus for providing process steam of desired temperature and pressure. 4,352,270, Cl. 60-648.000.
Silvestrini, Bruno; and Baiocchi, Leandro, to Aziende Chimiche Riunite Angelini Francesco A.C.R.A.F. S.p.A. [(1-Benzyl-1H-indazol-3-yl)oxy] acetic acid salt with L. lysine. 4,352,813, Cl. 424-273.00N.
Silvus, Howard S., Jr.; Newman, Francis M., Jr.; and Swanson, Robert K., to Southwest Research Institute. Method and apparatus for measuring concentration of suspended oils in water. 4,352,983, Cl. 250-227.000.

Simpson, Robert E.: *See—*
Bolton, Colin B.; Miles, Alan J.; and Simpson, Robert E., 4,352,353, Cl. 128-201.240.

Singer Company, The: *See—*
Krupick, Walter J., 4,352,233, Cl. 29-434.000.
Sacks, Sidney M., 4,353,058, Cl. 340-347.0CC.

Sirrine, Gordon G.: *See—*
Grappendorf, Richard H.; Sirrine, Gordon G.; and Davis, John S., 4,352,400, Cl. 175-330.000.

SKF Kugellagerfabriken GmbH: *See—*
Olschewski, Armin; Brandenstein, Manfred; and Walter, Lothar, 4,352,419, Cl. 192-98.000.

Skilling, John B.: *See—*
Paton, H. Neil; Gylland, E. Frederick, Jr.; Sandys, Jeffrey P.; and Skilling, John B., 4,352,509, Cl. 280-716.000.

Skotheim, Terje. Double photoelectrochemical cell for conversion of solar energy to electricity. 4,352,868, Cl. 429-111.000.

Slade, Clyde G. Self-equalizing welding structure. 4,352,971, Cl. 219-86.610.

Sleep, Craig, to SI Handling Systems, Inc. Tow truck selector pin. 4,352,327, Cl. 104-170.000.

Sloan, Albert H. Hand operated suction dredge head and hydraulic submersible pump assembly. 4,352,251, Cl. 37-58.000.

Sloot, James W.: *See—*
Orth, Heinz W.; and Sloot, James W., 4,352,287, Cl. 73-60.000.

Smerdov, Andrei A.: *See—*
Venin, Igor V.; Vidershain, Tatyana V; Rodionov, Vladimir I.; Smerdov, Andrei A.; and Tabak, Viktor Y., 4,352,351, Cl. 128-1.00C.

Smiley, George W. Grain distributor and method. 4,352,623, Cl. 414-294.000.

Smillie, John G., to Aurora Industries, Inc. Shaped rigid articles containing fly ash and resin. 4,352,856, Cl. 428-329.000.

Smith, Barry L.; and Hoelscher, James R., to General Signal Corp. Audio frequency track circuit for rapid transit applications with signal modulation security. 4,352,475, Cl. 246-34.0CT.

Smith, Derek R., to Union Carbide Corporation. Method of producing a joint capable of transmitting high torque. 4,352,584, Cl. 403-13.000.

Smith, Grant H., to Borg-Warner Corporation. Constant velocity universal joint with improved centering device and boot seal. 4,352,276, Cl. 464-109.000.

Smith-Johannsen, Robert, to Norcem A.S. Process of producing sorel cement. 4,352,694, Cl. 106-106.000.

Smith, Richard W.; and Frank, Robert H., to X. S. Smith, Inc. Movable inflatable ceiling or partition for greenhouse use. 4,352,259, Cl. 52-2.000.

Smith, Ronald A., to Fairchild Camera & Instrument Corp. Data storage apparatus. 4,352,492, Cl. 273-1.0GC.

Smith, Terrance R. Bicycle storage rack. 4,352,432, Cl. 211-19.000.

SmithKline Beckman Corporation: *See—*
Gleason, John G.; Kinzig, Charles M.; and Bryan, Deborah L., 4,352,757, Cl. 549-513.000.
Lam, Bing L.; and Pridgen, Lendon N., 4,352,933, Cl. 544-320.000.

Smithkline Corporation: *See—*
Bondinell, William E.; DeMarinis, Robert M.; Hieble, Jacob P.; and Pendleton, Robert G., 4,352,809, Cl. 424-258.000.
Weinstock, Joseph, 4,352,754, Cl. 260-330.300.

Snyder, Fred W., Jr.: *See—*
Turbak, Albin F.; El-Kafrawy, Adel; Snyder, Fred W., Jr.; and Auerbach, Andrew B., 4,352,770, Cl. 264-187.000.

Societe d'Assistance Technique Pour Produits Nestle S.A.: *See—*
Bracco, Umberto; Viret, Jean-Louis; and Rehacek, Josef, 4,352,746, Cl. 252-398.000.

Societe Labofina S.A.: *See—*
Espitalie, Jean; Madec, Marcel; Leplat, Paul; and Paulet, Jacques, 4,352,673, Cl. 23-230.0EP.

Sodex-Magister, Societe d'Exploitation des Brevets Neiman: *See—*
Neyret, Guy, 4,352,278, Cl. 70-252.000.

Solvay & Cie. (Societe Anonyme): *See—*
Paucot, Andre, 4,352,939, Cl. 560-120.000.

Sommers, Dale. Solar electric generator. 4,353,003, Cl. 310-306.000.

Sono-Tek Corporation: *See—*
Berger, Harvey L.; and Brandow, Charles R., 4,352,459, Cl. 239-102.000.

Sorenson, Richard W., to Carlingswitch, Inc. Toggle switch assembly. 4,352,965, Cl. 200-6.00R.

Southwest Research Institute: *See—*
Silvus, Howard S., Jr.; Newman, Francis M., Jr.; and Swanson, Robert K., 4,352,983, Cl. 250-227.000.

Southwire Company: *See—*
Adams, Ronald D.; and Chia, E. Henry, 4,352,697, Cl. 148-2.000.

Spademan, Richard G. Releasable step-in ski binding. 4,352,508, Cl. 280-624.000.

Spalding, Wilbur J., to Alliance Manufacturing Company, Inc., The. Door operator screw coupling. 4,352,585, Cl. 403-24.000.

Spat, Melvin: *See—*
Lerner, Irwin S.; and Spat, Melvin, 4,353,049, Cl. 335-205.000.

Spector, George: *See—*
Orta, Phillip N.; and Spector, George, 4,352,461, Cl. 239-211.000.

Spectra-Physics, Inc.: *See—*
Patterson, Williams G.; Rochkind, Allen B.; Miller, Leslie A.; and Bradley, Martin P. T., 4,352,636, Cl. 417-22.000.

Spellmann, Richard A., to Chevron Research Company. Method of diagnosing errors off-line in pipe specification files of a computer-aided graphics system. 4,353,117, Cl. 364-300.000.

Spence, J. Ronald, to Standard Oil Company (Indiana). Sulfurized-/aminated mixture of ethylene-based polyolefin and polyisobutylene. 4,352,911, Cl. 525-211.000.

Sperry Corporation: *See—*
Minden, Henry T., 4,352,562, Cl. 356-350.000.

Spiess, Karl-Heinz; and Stock, Harald, to Dynamit Nobel Aktiengesellschaft. Process for the production of colorful and figurative designs of shaped synthetic-resin articles. 4,352,672, Cl. 8-444.000.

Sponsler, William A.: *See—*
Holbrook, Walter R.; and Sponsler, William A., 4,352,835, Cl. 427-38.000.

Spratt, Roger C.: *See—*
Grimshaw, Keith; and Spratt, Roger C., 4,352,224, Cl. 19-97.000.

Stabatrol Corporation: *See—*
Valiga, Richard E.; and Rosso, John R., 4,352,601, Cl. 405-270.000.

Stahl, Rainer: *See—*
Krumm, Horst; Schettler, Helmut; Stahl, Rainer; and Zuhlke, Rainer, 4,353,040, Cl. 333-1.000.

Stamm, Thomas A., to Honeywell Inc. Battery operated access control card. 4,353,064, Cl. 340-825.310.

Standard Oil Company (Indiana): *See—*
James, David E.; and Koeritz, Richard N., 4,352,745, Cl. 252-364.000.
Ott, Louis E., 4,352,688, Cl. 71-11.000.
Spence, J. Ronald, 4,352,911, Cl. 525-211.000.

Stange, Klaus K., to Xerox Corporation. Multicolor development system for electrophotographic printing machines. 4,352,552, Cl. 355-4.000.

Stanley, Henry, to National Starch and Chemical Corp. Polyurethane adhesive compositions modified with a dicarbamate ester useful in laminating substrates. 4,352,858, Cl. 428-423.100.

Star Packaging Corporation: *See—*
Andrews, H. David, Jr., 4,352,263, Cl. 53-436.000.

Starkey, Philip E.: *See—*
Higgins, Raymond; Hutchings, Graham J.; Trebilco, Deborah A.; and Starkey, Philip E., 4,352,755, Cl. 549-258.000.

Stein, Ludwig: *See—*
Dettke, Manfred; and Stein, Ludwig, 4,352,690, Cl. 106-1.230.

Steiner, Janos; Wenzly, Kalman; Toth, Jozsef T.; Tiggesbaumker, Peter; Goldmann, Wolf; and Butschko, Gerhard, to Magyar Aluminiumipari Troszt; and Krupp Polysius AG. Method and apparatus for burning fine-grain material. 4,352,660, Cl. 432-14.000.

Steinke, Mark H., to Lyon Metal Products, Incorporated. Drawer locking system. 4,352,529, Cl. 312-222.000.

Stevenson, Alastair K.: *See—*
Pelczyk, Alan; Purssell, Robert F.; Woollard, Alfred J.; Fowler, Albert L.; Walker, David M.; Henderson, Alan G.; and Stevenson, Alastair K., 4,353,050, Cl. 336-30.000.

Stier, Bernhard; and Ruschek, Gerhard, to VDO Adolf Schindling AG. Fuel consumption indicator. 4,352,289, Cl. 73-114.000.

Stier, Bernhard, to VDO Adolf Schindling AG. Device for the control of the traveling speed of a motor vehicle. 4,352,404, Cl. 180-179.000.

Stiglmaier, Manfred; and Hormann, Rudolf, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Composite of a vehicle frame and body parts. 4,352,520, Cl. 296-182.000.

Stinson, Jonathan D., to Ford Motor Company. Control valve for shock absorber pistons and the like. 4,352,417, Cl. 188-322.150.

Stock, Harald: *See—*
Spiess, Karl-Heinz; and Stock, Harald, 4,352,672, Cl. 8-444.000.

Stoll, Kurt. Single-acting operating cylinder. 4,352,320, Cl. 92-13.000.

Stone & Webster Engineering Corporation: *See—*
Gartside, Robert J.; and Woebcke, Herman N., 4,352,728, Cl. 208-127.000.

Storage Technology Corporation: *See—*
Ruether, Peter G., 4,352,957, Cl. 179-15.00C.

Stork Amsterdam B.V.: *See—*
Santen, Salomon, 4,352,423, Cl. 198-472.000.

Strang, James E.: *See—*
Kinsell, Robert C.; Saba, Michael P.; and Strang, James E., 4,352,273, Cl. 62-87.000.

Strubelt, John R. Disposable litter devices. 4,352,340, Cl. 119-1.000.

Strupczewski, Joseph T.; and Allen, Richard C., to Hoechst-Roussel Pharmaceuticals Inc. 3-(1-Substituted-4-piperidyl)-1,2-benzisoxazoles. 4,352,811, Cl. 424-267.000.

Struthers, Ralph C., to Universal Fuel Systems, Inc. Metal/acid ion permeable membrane fuel cell. 4,352,864, Cl. 429-18.000.

Strzegowski, Joseph C., Jr.: *See—*
Hardigg, James S.; Strzegowski, Joseph C., Jr.; Burgess, Asial L., Jr.; and Neal, David B., 4,352,977, Cl. 219-243.000.

Stuller Engineering & Marketing Services: *See—*
Stuller, Howard E.; and Francis, Jimmie L., 4,352,608, Cl. 406-116.000.

Stuller, Howard E.; and Francis, Jimmie L., to Stuller Engineering & Marketing Services. Remotely positioned intake apparatus for a pneumatic conveying system and method of using same. 4,352,608, Cl. 406-116.000.

Styslinger, James R., to M.W. Kellogg Company, The. Waste heat boiler and steam superheater system. 4,352,341, Cl. 122-7.00R.

Sublett, Bobby J.: *See—*
Petke, Frederick D.; Sublett, Bobby J.; and McConnell, Richard L., 4,352,925, Cl. 528-309.000.

Subramanian, Krishnamoorthy: *See—*
Samanta, Shyam K.; Subramanian, Krishnamoorthy; Ezis, Andre; and Moskowitz, David, 4,352,308, Cl. 82-1.00C.

Suefuji, Kazutaka: *See*—
Murayama, Akira; Harada, Fumio; and Suefuji, Kazutaka, 4,352,642, Cl. 417-312.000.
Suga, Shigemi: *See*—
Ojima, Iwao; and Suga, Shigemi, 4,352,752, Cl. 260-112.50R.
Sugano, Takuo; Niki, Eiji; Okabe, Yoichi; and Akiyama, Tatsuo, to Takashi Mukaibo. Ion selective field-effect sensor. 4,352,726, Cl. 204-195.00M.
Sugden, Keith C. Yacht keels. 4,352,335, Cl. 114-143.000.
Sugihara, Yasuhiro: *See*—
Tatematsu, Kenzou; Sugihara, Yasuhiro; Andou, Hiroyuki; Seki, Tatsuo; Dezaki, Yoshito; and Nishino, Yasukazu, 4,353,095, Cl. 358-260.000.
Sugisaki, Mutuo: *See*—
Takamatsu, Hiroshi; Tanaka, Hiroshi; and Sugisaki, Mutuo, 4,352,640, Cl. 417-273.000.
Sugishima, Kenji; and Takada, Tadakazu, to Fujitsu Limited. Method of manufacturing a semiconductor device. 4,352,724, Cl. 204-192.00E.
Sugiura, Hiroaki: *See*—
Yoshino, Yataro; Ota, Akiho; and Sugiura, Hiroaki, 4,352,435, Cl. 215-1.00C.
Sugiyama, Isao: *See*—
Nomoto, Seiichiro; Ikuta, Hironori; Machida, Yoshimasa; Negi, Shigeto; Sugiyama, Isao; Yamauchi, Hiroshi; Nakatsuka, Kenro; and Saito, Isao, 4,352,801, Cl. 424-246.000.
Sugiyama, Toshio; and Maeda, Takeshi, to Hitachi, Ltd. Photoelectric focus and tracking apparatus. 4,352,981, Cl. 250-201.000.
Suhara, Yasuji: *See*—
Ishitsuka, Hideo; Shirai, Haruyoshi; Umeda, Isao; and Suhara, Yasuji, 4,352,792, Cl. 424-180.000.
Sukejima, Hajime: *See*—
Nakayama, Yasuharu; Iwai, Hiroshi; and Sukejima, Hajime, 4,352,902, Cl. 524-40.000.
Sukenik, Robert J., to New Hudson Corporation. Fiber covered roller for high temperature applications. 4,352,230, Cl. 29-125.000.
Sullivan, Ann C.: *See*—
Guthrie, Robert W.; Kierstead, Richard W.; Mennona, Francis A.; and Sullivan, Ann C., 4,352,758, Cl. 549-521.000.
Sumitomo Chemical Company, Limited: *See*—
Hasegawa, Shinichi; Ueda, Yuji; and Tomita, Hiroshige, 4,352,941, Cl. 564-314.000.
Mashita, Kentaro; and Hanji, Katsumi, 4,352,915, Cl. 526-65.000.
Takisawa, Yukihisa; Saito, Kenji; and Yamachika, Hiroshi, 4,352,756, Cl. 549-497.000.
Yamahira, Yoshiya; Noguchi, Takeshi; Fujioka, Keiji; Noguchi, Tetsuo; and Sato, Shigeji, 4,352,793, Cl. 424-180.000.
Sumitomo Electric Industries, Ltd.: *See*—
Shimba, Hiroshi; Suzuki, Fumio; and Yuto, Masao, 4,352,701, Cl. 156-51.000.
Sundstrand Corporation: *See*—
Meyer, James H. M., 4,352,645, Cl. 417-417.000.
Pollman, Frederic W., 4,352,367, Cl. 137-82.000.
Sutherland, David M., deceased: *See*—
Hartley, Nicholas E. W.; Wilcockson, Alan; Sutherland, David M., deceased; and Midland Bank Trust Company Limited, legal representative, The, 4,352,698, Cl. 148-4.000.
Suzuki, Fumio: *See*—
Shimba, Hiroshi; Suzuki, Fumio; and Yuto, Masao, 4,352,701, Cl. 156-51.000.
Suzuki, Kenichi: *See*—
Oyamada, Tugio; Suzuki, Kenichi; Kishi, Toshikazu; and Shibato, Eizo, 4,352,975, Cl. 219-125.110.
Suzuki, Masanori: *See*—
Noguchi, Tsutomu; Kajiwara, Yuji; Suzuki, Masanori; and Takamizawa, Hideo, 4,353,047, Cl. 333-247.000.
Suzuki, Naoyoshi: *See*—
Shimada, Yukio; Suzuki, Naoyoshi; Ohashi, Toshio; and Inoshita, Yasushi, 4,352,452, Cl. 236-13.000.
Suzuki, Shigeo; Kakuta, Atsushi; Oka, Hiroyuki; Mori, Yasuki; and Morishita, Hirosada, to Hitachi, Ltd. Complex type electrophotographic plate and electrophotographic method using the same. 4,352,876, Cl. 430-58.000.
Suzuki, Yasuo: *See*—
Matsumoto, Kenji; and Suzuki, Yasuo, 4,352,383, Cl. 152-352.00R.
Svenska Streck Aktiebolag: *See*—
Rosenlind, K. Goran; and Brandberg, S. B. Thomas, 4,352,441, Cl. 222-99.000.
Svoboda, Josef; and Leichtfried, Friedrich, to TMC Corporation. Ski brake. 4,352,506, Cl. 280-605.000.
Svoboda, Josef: *See*—
Krob, Erwin; and Svoboda, Josef, 4,352,507, Cl. 280-605.000.
Swallow, Brian R., to Union Carbide Corporation. Process for removing nitrogen from natural gas. 4,352,685, Cl. 62-28.000.
Swanson, Robert K.: *See*—
Silvus, Howard S., Jr.; Newman, Francis M., Jr.; and Swanson, Robert K., 4,352,983, Cl. 250-227.000.
Sweeney, James S., Jr., to Unisen, Inc. Adaptive pulsing motor control for positioning system. 4,353,019, Cl. 318-594.000.
Swiss Aluminium Ltd.: *See*—
Hardt, Jean; and Widrig, Jakob, 4,352,408, Cl. 181-249.000.
SWS Silicones Corporation: *See*—
Tripp, Jeffrey A., 4,352,917, Cl. 528-26.000.
Sybron Corporation: *See*—
Pillis, Lewis J.; and Davis, Lois T., 4,352,886, Cl. 435-262.000.
Sydansk, Robert D., to Marathon Oil Company. Process for selectively reducing the permeability of a subterranean formation. 4,352,395, Cl. 166-292.000.
Szabo, Robert J., to Variform Plastics, Inc. Method and apparatus for creating random shadow patterns in formed vinyl sheet article. 4,352,771, Cl. 264-210.200.
Szloboda, David T. Apparatus for converting garbage into a fuel gas. 4,352,676, Cl. 48-76.000.
T. W. Woods Constructions Pty. Limited: *See*—
Woods, Thomas W., 4,352,284, Cl. 72-452.000.
Tabak, Viktor Y.: *See*—
Venin, Igor V.; Vidershain, Tatyana V; Rodionov, Vladimir I.; Smerdov, Andrei A.; and Tabak, Viktor Y., 4,352,351, Cl. 128-1.00C.
Tada, Fusao; Itoh, Takeshi; Oka, Joji; and Okamoto, Akira, to Sakai Chemical Industry Co., Ltd.; and Nippon Steel Corporation. Coating composition for metal-substrate. 4,352,899, Cl. 523-451.000.
Tada, Masahira: *See*—
Ogata, Masami; Yoshihara, Motoshi; and Tada, Masahira, 4,352,227, Cl. 29-33.00F.
Tada, Satomi: *See*—
Kumasaka, Sadao; Tada, Satomi; Yoneyama, Goro; and Hashimoto, Kazuo, 4,352,651, Cl. 425-261.000.
Tada, Satoru: *See*—
Chida, Yoshinori; and Tada, Satoru, 4,352,577, Cl. 400-196.100.
Taiyo Yuden Co., Ltd.: *See*—
Fukai, Kikuji; and Shirouchi, Hideo, 4,352,440, Cl. 221-178.000.
Takada, Tadakazu: *See*—
Sugishima, Kenji; and Takada, Tadakazu, 4,352,724, Cl. 204-192.00E.
Takagi, Izumi, to Kawasaki Jukogyo Kabushiki Kaisha. Suspension and steering assembly for snowmobile. 4,352,501, Cl. 280-16.000.
Takakura, Koichi: *See*—
Nakashima, Toshihide; Tanihara, Masao; and Takakura, Koichi, 4,352,884, Cl. 435-180.000.
Takamatsu, Hiroshi; Tanaka, Hiroshi; and Sugisaki, Mutuo, to Honda Giken Kogyo Kabushiki Kaisha. Fluid compressor. 4,352,640, Cl. 417-273.000.
Takami, Akio; and Kondo, Kazuo, to NGK Spark Plug Co., Ltd. Tin oxide, titanium oxide and/or zirconium oxide coated β-eucryptite particles having a negative coefficient of linear thermal expansion and sealing compositions containing said particles. 4,352,889, Cl. 501-15.000.
Takamizawa, Hideo: *See*—
Noguchi, Tsutomu; Kajiwara, Yuji; Suzuki, Masanori; and Takamizawa, Hideo, 4,353,047, Cl. 333-247.000.
Takasaki, Hirokazu: *See*—
Ogata, Masatsugu; Takasaki, Hirokazu; Nemoto, Masanori; Narahara, Toshikazu; Hironaka, Kenichi; and Ishikawa, Tetuo, 4,352,897, Cl. 523-220.000.
Takase, Yoshiyuki: *See*—
Matsumoto, Jun-ichi; Takase, Yoshiyuki; and Nishimura, Yoshiro, 4,352,803, Cl. 424-251.000.
Takashi Mukaibo: *See*—
Sugano, Takuo; Niki, Eiji; Okabe, Yoichi; and Akiyama, Tatsuo, 4,352,726, Cl. 204-195.00M.
Takayuki, Tanaka, to Oki Electric Industry Co., Ltd. Output interface circuits. 4,353,104, Cl. 361-91.000.
Takechi, Masafumi: *See*—
Kurihara, Nobuo; Nishikawa, Mitsuyo; Nagahashi, Yoshitoshi; and Takechi, Masafumi, 4,352,293, Cl. 73-593.000.
Takeda Chemical Industries, Ltd.: *See*—
Nakabayashi, Masamitsu; Doura, Fumihiro; Miyamoto, Reiji; and Tatsumi, Tetsujiro, 4,352,749, Cl. 525-149.000.
Takeda, Takashi; Ogata, Minoru; and Kurabayashi, Sadasuke, to Canon Kabushiki Kaisha. Facsimile apparatus. 4,353,097, Cl. 358-287.000.
Takematsu, Hikaru: *See*—
Inomata, Tetsuro; Katsukura, Kazutada; and Takematsu, Hikaru, 4,353,066, Cl. 340-825.960.
Taketoshi, Kazuhisa; and Ogusu, Chihaya, to Nippon Hoso Kyokai. Method for fabricating a semiconductor device. 4,352,834, Cl. 427-38.000.
Takisawa, Yukihisa; Saito, Kenji; and Yamachika, Hiroshi, to Sumitomo Chemical Company, Limited. Production of furfuryl alcohols. 4,352,756, Cl. 549-497.000.
Talke, Frank E.: *See*—
Lee, Francis C.; Mills, Ross N.; and Talke, Frank E., 4,353,078, Cl. 346-140.00R.
Tamukai, Tadao: *See*—
Hori, Fumihisa; Tamukai, Tadao; and Miyajima, Mikio, 4,352,576, Cl. 400-154.400.
Tamuro, Yasuharu: *See*—
Kobayashi, Hideaki; Tamuro, Yasuharu; Yasuhara, Takashi; and Ishii, Kunio, 4,353,002, Cl. 310-64.000.
Tanahashi, Kyoji, to Nippon Electric Co., Ltd. Noise signal suppressor having improved output signals. 4,353,001, Cl. 307-542.000.
Tanaka, Hideharu: *See*—
Uchikawa, Fusaoki; Tanaka, Hideharu; Sekiya, Mutsuo; and Ohata, Yasufumi, 4,352,853, Cl. 428-304.400.
Tanaka, Hiroshi: *See*—
Takamatsu, Hiroshi; Tanaka, Hiroshi; and Sugisaki, Mutuo, 4,352,640, Cl. 417-273.000.
Tanaka, Masanori: *See*—
Endoh, Kenjiro; Ishizawa, Yoshiyuki; Tanaka, Masanori; and Iwasaki, Koji, 4,353,060, Cl. 340-347.0AD.

Taniguchi, Takuji, to Aisin Warner Kabushiki Kaisha. Strainer for automatic transmission control valve. 4,352,737, Cl. 210-455.000.

Tanihara, Masao: *See—*
Nakashima, Toshihide; Tanihara, Masao; and Takakura, Koichi, 4,352,884, Cl. 435-180.000.

Taplay, James W. Heat pump system. 4,352,272, Cl. 62-235.100.

Tassen, Devon E. Windmill blade stalling and speed control device. 4,352,633, Cl. 416-137.000.

Tatematsu, Kenzou; Sugihara, Yasuhiro; Andou, Hiroyuki; Seki, Tatsuo; Dezaki, Yoshito; and Nishino, Yasukazu, to Matsushita Electric Industrial Co., Ltd. Facsimile bandwidth compression method system and apparatus. 4,353,095, Cl. 358-260.000.

Tatsumi, Tetsujiro: *See—*
Nakabayashi, Masamitsu; Doura, Fumihiro; Miyamoto, Reiji; and Tatsumi, Tetsujiro, 4,352,749, Cl. 525-149.000.

Taylor, Keith A., to Tektronix, Inc. Glitch detector. 4,353,032, Cl. 328-165.000.

Taylor, Kenneth W.: *See—*
Dunning, Norman D.; Jervis, Franklin D.; and Taylor, Kenneth W., 4,352,578, Cl. 400-208.000.

Taylor, Lloyd D.; and Schwarzel, William C., to Polaroid Corporation. Polymeric hydroxamic acid polyvalent metal salt interlayer for photographic diffusion transfer products. 4,352,871, Cl. 430-505.000.

TDC-Technology Development Corp.: *See—*
French, Frederic A.; and French, Douglas A., 4,352,787, Cl. 423-445.000.

TDK Electronics Co., Ltd.: *See—*
Yoda, Kuniichi; Ohkawa, Takehisa; and Azegami, Hitoshi, 4,352,859, Cl. 428-425.900.

Teac Corporation: *See—*
Inoue, Hideo, 4,353,100, Cl. 360-65.000.

Tecl, Bohuslav: *See—*
Passler, Michael; Tecl, Bohuslav; and Schumacher, Rolf, 4,352,846, Cl. 428-105.000.

Teijin Limited: *See—*
Ozaki, Kiyotaka; Matsui, Michikage; and Minemura, Norihiro, 4,352,705, Cl. 156-155.000.

Tektronix, Inc.: *See—*
Taylor, Keith A., 4,353,032, Cl. 328-165.000.

Teradyne, Inc.: *See—*
Johnson, Lennart B., 4,352,534, Cl. 339-19.000.

Terai, Kenji: *See—*
Kono, Hisashi; Terai, Kenji; Hisadomi, Masaki; Uemura, Katumi; Ohta, Sumio; and Yamamoto, Yoshiichi, 4,352,923, Cl. 528-233.000.

Teramae, Kazuo: *See—*
Itoh, Masashi; and Teramae, Kazuo, 4,353,125, Cl. 369-136.000.

Teraoka, Masao, to Tochigi-Fuji Sangyo Kabushiki Kaisha. Hub clutch. 4,352,418, Cl. 192-36.000.

Terry, Angel F.: *See—*
Gokey, Phillip E.; Hurlbut, Donovan W.; Sederholm, Emma L.; Terry, Angel F.; and Jewer, Alan A., 4,353,077, Cl. 346-137.000.

Tetra Pak Developpement SA: *See—*
Olsson, Alvar; and Giacomelli, Peter, 4,352,421, Cl. 198-392.000.

Texaco Inc.: *See—*
Paap, Hans J.; Meador, Richard A.; and Arnold, Dan M., 4,352,288, Cl. 73-61.00R.

Texas Instruments Incorporated: *See—*
Chatterjee, Pallab K., 4,353,082, Cl. 357-23.000.
De Filippis, Pietro; Salvatore, Amedeo; and Abbondandolo, Luigi, 4,352,963, Cl. 200-5.00A.
Raymond, Joseph H., Jr.; and Gudger, Keith H., 4,352,997, Cl. 307-279.000.
White, Lionel S., Jr., 4,352,996, Cl. 307-269.000.

Textron, Inc.: *See—*
Blakeslee, Frederick R., 4,352,470, Cl. 242-72.100.

Thalstrom, Peeter; and Westin, Karl G., to AB Westin & Backlund. Trimming and/or fin cutting tools with interchangeable cutting edges. 4,352,309, Cl. 83-697.000.

Thermacore, Inc.: *See—*
Eastman, George Y., 4,352,392, Cl. 165-104.250.

Thiel, Charles G., to Minnesota Mining and Manufacturing Company. Aerosol compositions containing finely divided solid materials. 4,352,789, Cl. 424-46.000.

Thomas A. Schutz Co., Inc.: *See—*
Eckert, Ronald P., 4,352,843, Cl. 428-33.000.

Thompson, Roger L.: *See—*
Fleming, Henry P.; Pharr, David M.; and Thompson, Roger L., 4,352,827, Cl. 426-270.000.

Thompson, Worthington J. Pneumatic toroidal weir. 4,352,591, Cl. 405-87.000.

Thomson-CSF: *See—*
Bernet, Jean-Marie; and Lejeune, Gabriel, 4,353,057, Cl. 340-347.0SH.
Decroix, Jean-Yves; Seytre, Gerard; Charlot, Pierre; and Dubois, Jean-Claude, 4,353,107, Cl. 361-323.000.
Menard, Christian; and Gaches, Philippe, 4,352,345, Cl. 123-414.000.

Thorsrud, Agmund K.: *See—*
Siedenstrang, Roy W.; and Thorsrud, Agmund K., 4,352,854, Cl. 428-318.800.

Thurmond, Gary D.: *See—*
Forward, Robert L.; and Thurmond, Gary D., 4,352,982, Cl. 250-214.00A.

Tiggesbaumker, Peter: *See—*
Steiner, Janos; Wenzly, Kalman; Toth, Jozsef T.; Tiggesbaumker, Peter; Goldmann, Wolf; and Butschko, Gerhard, 4,352,660, Cl. 432-14.000.

Tipper Tie, Inc.: *See—*
Winders, Gordon R.; MacKay, Fredric M.; and Whittlesey, Thomas E., 4,352,232, Cl. 29-243.560.

Tisbo, Cosmo N.; and Tisbo, Thomas A., to Custom Plastics, Inc. Container for holding organic matter during decomposition. 4,352,888, Cl. 435-287.000.

Tisbo, Thomas A.: *See—*
Tisbo, Cosmo N.; and Tisbo, Thomas A., 4,352,888, Cl. 435-287.000.

TMC Corporation: *See—*
Krob, Erwin; and Svoboda, Josef, 4,352,507, Cl. 280-605.000.
Svoboda, Josef; and Leichtfried, Friedrich, 4,352,506, Cl. 280-605.000.

Tobinaga, Takeshi, to Mitsubishi Petrochemical Company Limited. Binder composition for foundry sand molds and cores. 4,352,914, Cl. 525-504.000.

Tochigi-Fuji Sangyo Kabushiki Kaisha: *See—*
Teraoka, Masao, 4,352,418, Cl. 192-36.000.

Toda, Yuzo; Koizumi, Junji; Ogawa, Masasi; Sera, Hidefumi; and Kubodera, Seiiti, to Fuji Photo Film Co., Ltd. Silver halide color photographic materials. 4,352,873, Cl. 430-545.000.

Tohyama, Shigeo; Akitomo, Nobuo; and Nemoto, Isao, to Hitachi, Ltd. Calibrating apparatus in a monochromator. 4,352,561, Cl. 356-332.000.

Tokyo Sanyo Electric Co., Ltd.: *See—*
Kimoto, Yuji, 4,353,034, Cl. 329-103.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Endoh, Kenjiro; Ishizawa, Yoshiyuki; Tanaka, Masanori; and Iwasaki, Koji, 4,353,060, Cl. 340-347.0AD.
Hirahara, Shuzo, 4,352,553, Cl. 355-14.00E.
Ishida, Tsuyoshi, 4,352,988, Cl. 250-559.000.
Morita, Shigeru, 4,352,713, Cl. 156-612.000.
Watanabe, Masaru; Amada, Takayoshi; and Yamaguchi, Shinichi, 4,352,462, Cl. 239-266.000.

Toldin, Anatoly A.: *See—*
Lebedev, Vladimir K.; Kuchuk-Yatsenko, Sergei I.; Krivenko, Valery G.; Bogorsky, Mikhail V.; Cherednichok, Vitaly T.; Toldin, Anatoly A.; and Sakharnov, Vasily A., 4,352,972, Cl. 219-100.000.

Tomcsanyi, Gabor: *See—*
Bergmann, Gyorgy; Horvath, Mihaly; Palfalvi, Gyorgy; Tomcsanyi, Gabor; Kovacs, Gyula; and Laszlo, Kardy, 4,352,378, Cl. 138-38.000.

Tomforde, Johann: *See—*
Gallitzendorfer, Josef; Cardiet, Gerard; and Tomforde, Johann, 4,353,111, Cl. 362-80.000.

Tomita, Hiroshige: *See—*
Hasegawa, Shinichi; Ueda, Yuji; and Tomita, Hiroshige, 4,352,941, Cl. 564-314.000.

Tomita, Yoshifumi: *See—*
Miura, Kiyoshi; Watanabe, Naomitsu; and Tomita, Yoshifumi, 4,352,878, Cl. 430-167.000.

Tomka, Ivan, to Ciba-Geigy AG. Novel gelatins, processes for their preparation and their use. 4,352,695, Cl. 106-135.000.

Tomka, Jiri G.: *See—*
Cogswell, Frederic N.; and Tomka, Jiri G., 4,352,927, Cl. 528-502.000.

Tomuro, Yasushi. Straightly extensible measuring tape. 4,352,244, Cl. 33-137.00R.

Tomy Kogyo Co., Inc.: *See—*
Watanabe, Hiroyuki, 4,352,493, Cl. 273-1.0GA.

Tong, David P., to Humanicare International Inc. Urinary incontinence garment. 4,352,356, Cl. 128-288.000.

Toolmakers, Incorporated: *See—*
Hilton, Carl W., 4,352,648, Cl. 425-78.000.

Tostado, Ramon. Adjustable cleat. 4,352,336, Cl. 114-218.000.

Toth, Jozsef T.: *See—*
Steiner, Janos; Wenzly, Kalman; Toth, Jozsef T.; Tiggesbaumker, Peter; Goldmann, Wolf; and Butschko, Gerhard, 4,352,660, Cl. 432-14.000.

Toth, Leslie, to Branson Ultrasonics Corporation. Friction welding apparatus. 4,352,711, Cl. 156-497.000.

Toyo Boseki Kabushiki Kaisha: *See—*
Ukai, Tetsuo; Matsumoto, Hiroshi; and Kawamura, Chikara, 4,352,736, Cl. 210-321.300.

Toyo Rubber Chemical Industrial Corp.: *See—*
Kumasaka, Sadao; Tada, Satomi; Yoneyama, Goro; and Hashimoto, Kazuo, 4,352,651, Cl. 425-261.000.

Toyoda, Kenji, to Nippon Kogaku K.K. Camera having a variable program exposure control device. 4,352,548, Cl. 354-286.000.

tpT Machinery Corporation: *See—*
Ott, Lothar; and Gessner, Dieter, 4,352,653, Cl. 425-541.000.

Traas, Petrus C.; Renes, Harrie; and Boelens, Harmannus, to Naarden International N.V. Novel acyl-polyalkylindan compounds and the use thereof as a base for perfume, as well as perfume compositions. 4,352,748, Cl. 252-522.00R.

Trane Company, The: *See—*
Saunders, James F., 4,352,635, Cl. 417-16.000.

TRANSELEKTRO Magyar Villamossagi Kulkereskedelmi Vallalat: *See*—
Bergmann, Gyorgy; Horvath, Mihaly; Palfalvi, Gyorgy; Tomcsanyi, Gabor; Kovacs, Gyula; and Laszlo, Kardy, 4,352,378, Cl. 138-38.000.
Travel Accessories Manufacturing Co., Inc.: *See*—
Burney, Charles F., 4,352,403, Cl. 180-176.000.
Trebilco, Deborah A.: *See*—
Higgins, Raymond; Hutchings, Graham J.; Trebilco, Deborah A.; and Starkey, Philip E., 4,352,755, Cl. 549-258.000.
Treitel, Werner S.: *See*—
Ruble, Ray; and Treitel, Werner S., 4,353,115, Cl. 363-42.000.
Trenkler, Werner, to Dr. Ing. h.c.F. Porsche Aktiengesellschaft. Mounting element with threaded member attached to a body wall of an automotive vehicle. 4,352,521, Cl. 296-191.000.
Tresner, Homer D.: *See*—
Liu, Chao-Min; Tresner, Homer D.; and Westley, John, 4,352,934, Cl. 548-217.000.
Tresper, Erhard: *See*—
Lohr, Karl-Dieter; Ullrich, Martin; and Tresper, Erhard, 4,352,568, Cl. 366-84.000.
Tri-Matic, Inc.: *See*—
Purtell, Rufus J., 4,352,460, Cl. 239-184.000.
Tripp, Jeffrey A., to SWS Silicones Corporation. Hydrophilic coatings for textile materials. 4,352,917, Cl. 528-26.000.
Trott, Richard J.: *See*—
Loveless, W. L.; Trott, Richard J.; Heath, Robert H.; and Glick, William L., 4,352,607, Cl. 406-88.000.
Trudel, Murray L.; Lockwood, George C.; and Evans, G. Glenn, to NCR Corporation. Low voltage nonvolatile memory device. 4,353,083, Cl. 357-23.000.
TRW Inc.: *See*—
Zehren, James N., 4,352,394, Cl. 166-106.000.
Tsikos, Constantine, to Siemens Corporation. Capacitive fingerprint sensor. 4,353,056, Cl. 340-146.30E.
Tsukada, Tsutomu, to Anelva Corporation. Dry etching device comprising an electrode for controlling etch rate. 4,352,725, Cl. 204-192.00E.
Tsukagoshi, Tsunehiro; Yokozeki, Shinichi; Yoshino, Toshikazu; and Arai, Yasuyuki. Diaphragms for acoustic instruments and method of producing the same. 4,352,407, Cl. 181-167.000.
Tucker, Edward: *See*—
Tucker, Winston B., deceased; and Tucker, Edward L., 4,352,655, Cl. 431-1.000.
Tucker, Edward L.: *See*—
Tucker, Winston B., deceased; and Tucker, Edward L., 4,352,655, Cl. 431-1.000.
Tucker, Mary L., administratrix: *See*—
Tucker, Winston B., deceased; and Tucker, Edward L., 4,352,655, Cl. 431-1.000.
Tucker, Willmot A.: *See*—
Tucker, Winston B., deceased; and Tucker, Edward L., 4,352,655, Cl. 431-1.000.
Tucker, Winston B., deceased (by Tucker, Mary L., administratrix); and Tucker, Edward L., to Tucker, Willmot A.; and Tucker, Edward. Engine. 4,352,655, Cl. 431-1.000.
Tuckey, Charles H., to Walbro Corporation. Self-contained rotary fuel pump. 4,352,641, Cl. 417-283.000.
Tupper, Alan W. Apparatus for suspending, locating, moving or fastening loads. 4,352,330, Cl. 104-96.000.
Turbak, Albin F.; El-Kafrawy, Adel; Snyder, Fred W., Jr.; and Auerbach, Andrew B., to International Telephone and Telegraph Corporation. Process for forming shaped cellulosic product. 4,352,770, Cl. 264-187.000.
Turbine Metal Technology, Inc.: *See*—
Sievers, G. Kelly, 4,352,840, Cl. 427-252.000.
Turetsky, Isadore. Filter-purifier cartridge. 4,352,735, Cl. 210-238.000.
Turner, Brian C.: *See*—
Park, Timothy A.; and Turner, Brian C., 4,352,721, Cl. 204-35.00N.
Twizell, Rodney J.: *See*—
Hennessy, John B.; and Twizell, Rodney J., 4,352,245, Cl. 33-169.00B.
Tydings, John E., to United States of America, Navy. Cable connector. 4,352,542, Cl. 350-96.210.
Tyler Refrigeration Corporation: *See*—
Ibrahim, Fayez F., 4,352,275, Cl. 62-256.000.
Tyman, John H. P.; Patel, Mahesh S.; and Manzara, Anthony P., to Minnesota Mining and Manufacturing Company. Treatment of cashew nut shell liquid. 4,352,944, Cl. 568-766.000.
Tyrsted, Ivan, to Bang and Olufsen A/S. System for detection of tape thickness in tape recorders or players. 4,352,472, Cl. 242-186.000.
Ube Industries, Ltd.: *See*—
Kono, Hisashi; Terai, Kenji; Hisadomi, Masaki; Uemura, Katumi; Ohta, Sumio; and Yamamoto, Yoshiichi, 4,352,923, Cl. 528-233.000.
Uchida, Kozo, to Iwatsu Electric Co., Ltd. Combination of circular/-straight line light beam scan transforming apparatus and optical device and method of fabricating circular/straight line transforming device. 4,352,550, Cl. 355-3.00R.
Uchida, Yoshihiro: *See*—
Arichi, Shigeru; and Uchida, Yoshihiro, 4,352,796, Cl. 424-195.000.
Uchikawa, Fusaoki; Tanaka, Hideharu; Sekiya, Mutsuo; and Ohata, Yasufumi, to Mitsubishi Denki Kabushiki Kaisha. Sound absorber. 4,352,853, Cl. 428-304.400.
Ueda, Yuji: *See*—
Hasegawa, Shinichi; Ueda, Yuji; and Tomita, Hiroshige, 4,352,941, Cl. 564-314.000.
Uehara, Tsutomu: *See*—
Yamamoto, Masataka; Uehara, Tsutomu; and Yoshimori, Minoru, 4,352,850, Cl. 428-214.000.
Uemura, Katumi: *See*—
Kono, Hisashi; Terai, Kenji; Hisadomi, Masaki; Uemura, Katumi; Ohta, Sumio; and Yamamoto, Yoshiichi, 4,352,923, Cl. 528-233.000.
Uemura, Koichi; and Uemura, Makoto. Method and apparatus for constructing underground structure. 4,352,594, Cl. 405-138.000.
Uemura, Makoto: *See*—
Uemura, Koichi; and Uemura, Makoto, 4,352,594, Cl. 405-138.000.
Ujihara, Yoshio, to Nissho Corporation. Winged retention needle. 4,352,354, Cl. 128-214.00R.
Ukai, Tetsuo; Matsumoto, Hiroshi; and Kawamura, Chikara, to Toyo Boseki Kabushiki Kaisha. Wound flattened hollow fiber assembly having plural spaced core sections. 4,352,736, Cl. 210-321.300.
Ullrich, Martin: *See*—
Lohr, Karl-Dieter; Ullrich, Martin; and Tresper, Erhard, 4,352,568, Cl. 366-84.000.
Ulmsten, Ulf I.: *See*—
Johansson, Olof J. A.; and Ulmsten, Ulf I., 4,352,790, Cl. 424-78.000.
Umeda, Isao: *See*—
Ishitsuka, Hideo; Shirai, Haruyoshi; Umeda, Isao; and Suhara, Yasuji, 4,352,792, Cl. 424-180.000.
Union Carbide Corporation: *See*—
Fritz, Charles D.; Evans, Wilbur F.; and Cooke, Anson R., 4,352,689, Cl. 71-86.000.
Mellors, Geoffrey W., 4,352,869, Cl. 429-191.000.
Patterson, Charlton A.; and Wilson, Richard M., 4,352,714, Cl. 156-626.000.
Smith, Derek R., 4,352,584, Cl. 403-13.000.
Swallow, Brian R., 4,352,685, Cl. 62-28.000.
Unisen, Inc.: *See*—
Sweeney, James S., Jr., 4,353,019, Cl. 318-594.000.
United Kingdom Atomic Energy Authority: *See*—
Hartley, Nicholas E. W.; Wilcockson, Alan; Sutherland, David M., deceased; and Midland Bank Trust Company Limited, legal representative, The, 4,352,698, Cl. 148-4.000.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See*—
Bolton, Colin B.; Miles, Alan J.; and Simpson, Robert E., 4,352,353, Cl. 128-201.240.
Gunton, David J., 4,353,043, Cl. 333-151.000.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Energy in Her Britannic Majesty's Government of the: *See*—
Bowditch, Malcolm R., 4,352,841, Cl. 427-292.000.
U.S. Cap & Closure, Inc.: *See*—
Libit, Sidney M., 4,352,443, Cl. 222-207.000.
United States of America
Agriculture: *See*—
Chance, Leon H., 4,352,930, Cl. 544-205.000.
Fleming, Henry P.; Pharr, David M.; and Thompson, Roger L., 4,352,827, Cl. 426-270.000.
Army: *See*—
Ballato, Arthur; and Iafrate, Gerald J., 4,353,027, Cl. 324-56.000.
Hoffman, Richard E., 4,352,700, Cl. 149-19.200.
Energy: *See*—
Cookson, Alan H., 4,352,949, Cl. 174-27.000.
Navy: *See*—
Heitz, Roger M.; and Hill, Franklin, 4,352,851, Cl. 428-250.000.
Madigosky, Walter M.; and Lee, Gilbert F., 4,352,292, Cl. 73-575.000.
McLandrich, Matthew N., 4,352,563, Cl. 356-350.000.
Pickens, George O., 4,353,120, Cl. 367-13.000.
Tydings, John E., 4,352,542, Cl. 350-96.210.
U.S. Philips Corporation: *See*—
Bailey, Peter K.; and Guildford, Leslie H., 4,353,092, Cl. 358-160.000.
Carasso, Marino G.; and Nijboer, Jakob G., 4,353,130, Cl. 375-114.000.
Faddegon, Hans, 4,353,028, Cl. 324-111.000.
Franssen, Nico V., deceased; and de Haan, Friedrich J., administrator, 4,352,954, Cl. 179-1.00J.
Lorteije, Jean H. J.; Warrink, Geert; and Schneider, Henri W., 4,353,062, Cl. 340-767.000.
Moerkens, Jozef C.; and Woldring, Leonard, 4,353,007, Cl. 315-62.000.
Palmers, Hilbert; and Chermin, Hubertus M. J., 4,353,116, Cl. 363-133.000.
Rietveld, Jan J.; and Moreau, Alain, 4,353,112, Cl. 363-16.000.
van Tongeren, Hendricus F. J. J.; Schampers, Paulus P. M.; Weijland, Willem P.; and Carasso, Marino G., 4,353,005, Cl. 313-371.000.
United Technologies Corporation: *See*—
Andrews, Merritt B., 4,352,634, Cl. 416-154.000.
Cheney, Marvin C., Jr., 4,352,629, Cl. 416-18.000.
Universal Fuel Systems, Inc.: *See*—
Struthers, Ralph C., 4,352,864, Cl. 429-18.000.

Uno, Naoyuki; Jyojiki, Masao; and Aoki, Harumi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Camera focus detecting device. 4,352,545, Cl. 354-25.000.
UOP Inc.: *See*—
Bailey, Charles H., 4,352,783, Cl. 422-179.000.
Upjohn Company, The: *See*—
Anderson, David J.; and Loughman, Barbara E., 4,352,929, Cl. 544-54.000.
Maxey, Kirk M., 4,352,760, Cl. 260-404.000.
McCall, John M., 4,352,805, Cl. 424-250.000.
Prather, Richard A., 4,352,696, Cl. 106-163.00R.
Urai, Muneharu; Abe, Tadafumi; Haraguchi, Youichiro; and Hayashi, Koji. Apparatus for producing seat cushion member. 4,352,709, Cl. 156-380.600.
Uram, John R., Jr., to Goodyear Aerospace Corporation. Transparencies produced from epoxy resins cured with adducts of trimethoxyboroxine and benzyl alcohol and interlayers of mercaptan resins. 4,352,848, Cl. 428-192.000.
Urbye, Klaus: *See*—
Weber, Heinrich; Lorenz, Kurt; Dungs, Horst; and Urbye, Klaus, 4,352,720, Cl. 202-124.000.
Vacco Industries: *See*—
Kay, George; and Keskinen, Alan, 4,352,373, Cl. 137-561.00A.
Vaitkus, Rimantas L., to Motorola Inc. Multithreshold converter utilizing reference tracking amplifiers. 4,353,059, Cl. 340-347.0AD.
Valeron Corporation, The: *See*—
Hopkins, David A., 4,352,609, Cl. 407-42.000.
Valiga, Richard E.; and Rosso, John R., to Stabatrol Corporation. Permanent bin for temporary storage of hazardous materials. 4,352,601, Cl. 405-270.000.
Vallance, James K., to Ford Motor Company. Rotor assembly for wave compression supercharger. 4,352,638, Cl. 417-64.000.
Valle, L. George: *See*—
Butler, John; Valle, L. George; and Wall, Donald E., 4,352,386, Cl. 160-178.00C.
Valmet OY: *See*—
Iso-Aho, Kalevi, 4,352,228, Cl. 29-115.000.
Valyi, Emery I. Method for forming hollow plastic objects. 4,352,777, Cl. 264-538.000.
van der Lely, Ary; and Bom, Cornelis J. G., to C. van der Lely N.V. Haymaking machines. 4,352,268, Cl. 56-370.000.
Van Gelder, Robert V.: *See*—
Anderson, Jared A.; Van Gelder, Robert V.; Yazolino, Lauren F.; and Braun, Jimmy E., 4,352,274, Cl. 62-229.000.
van Tongeren, Hendricus F. J. J.; Schampers, Paulus P. M.; Weijland, Willem P.; and Carasso, Marino G., to U.S. Philips Corporation. Camera tube with mutually insulated, light absorbing particles on gun side of target. 4,353,005, Cl. 313-371.000.
van Zorge, Jacob A., to ACF Chemiefarma NV. Oxime ethers, their preparation and pharmaceutical compositions containing them. 4,352,804, Cl. 424-250.000.
Variform Plastics, Inc.: *See*—
Szabo, Robert J., 4,352,771, Cl. 264-210.200.
Vasiliev, Jury N.: *See*—
Iskra, Anton L.; Kharchenko, Mikhail S.; and Vasiliev, Jury N., 4,352,593, Cl. 405-108.000.
VDO Adolf Schindling AG: *See*—
Collonia, Harald, 4,352,402, Cl. 180-170.000.
Stier, Bernhard; and Ruschek, Gerhard, 4,352,289, Cl. 73-114.000.
Stier, Bernhard, 4,352,404, Cl. 180-179.000.
Veale, John R., to Plessey Peripheral Systems. Impact printer programmed servo system. 4,353,020, Cl. 318-601.000.
Vecchiarelli, Francis, to Hunter Douglas International, N.V. Tilter mechanism. 4,352,385, Cl. 160-177.000.
Venin, Igor V.; Vidershain, Tatyana V; Rodionov, Vladimir I.; Smerdov, Andrei A.; and Tabak, Viktor Y. Electronarcosis apparatus. 4,352,351, Cl. 128-1.00C.
Versatile Cornat Corporation: *See*—
Fleury, Edward, 4,352,301, Cl. 74-467.000.
Vest, Gary W. Fluorescent light with threaded connector. 4,352,539, Cl. 339-154.00L.
Victor United, Inc.: *See*—
Meyer, Leonard S., 4,352,769, Cl. 264-134.000.
Vidal-Meza, Gonzalo D., to Caterpillar Tractor Co. Heat exchanger having a corrugated sheet with staggered transition zones. 4,352,393, Cl. 165-166.000.
Vidershain, Tatyana V: *See*—
Venin, Igor V.; Vidershain, Tatyana V; Rodionov, Vladimir I.; Smerdov, Andrei A.; and Tabak, Viktor Y., 4,352,351, Cl. 128-1.00C.
Viel Elettromeccanica S.p.A.: *See*—
Vitaloni, Massimo, 4,352,401, Cl. 180-90.000.
Vilmur, Roger: *See*—
Rose, Richard A.; Gehrke, James K.; Goedken, Terrance J.; and Vilmur, Roger, 4,353,038, Cl. 331-36.00C.
Viret, Jean-Louis: *See*—
Bracco, Umberto; Viret, Jean-Louis; and Rehacek, Josef, 4,352,746, Cl. 252-398.000.
Virginia Mason Research Center: *See*—
Scurlock, James E.; and Curtis, Benson M., 4,352,820, Cl. 424-329.000.
Vitafin N.V.: *See*—
Esch, Johannes H. L. H., 4,352,300, Cl. 74-89.150.
Vitaloni, Massimo, to Viel Elettromeccanica S.p.A. Motor-car control group. 4,352,401, Cl. 180-90.000.
Voeller, Roger W.: *See*—
Noyes, Robert M.; and Voeller, Roger W., 4,352,829, Cl. 426-387.000.
Vogel, Hans, to MAN Maschinenfabrik Augsburg-Nuernberg AG. Apparatus for venting and deaerating from a liquid circuit. 4,352,683, Cl. 55-192.000.
von Meer, Walter; Jensen, Uwe; and Anthonsen, Reiner, to Felix Schoeller, Jr. GmbH & Co. KG. Photographic paper base with improved durability. 4,352,861, Cl. 428-511.000.
Votava, Werner F., to Ferro Corporation. Diopside crystal precursor glass frit flux in production of sanitary ware and feldspathic bodies. 4,352,890, Cl. 501-141.000.
VSI Corporation: *See*—
Jacobellis, A. A., 4,352,231, Cl. 29-157.00R.
Vultron, Inc.: *See*—
Devlin, Thomas A., 4,353,063, Cl. 340-798.000.
W. R. Grace & Co.: *See*—
Bornstein, Norman D., 4,352,702, Cl. 156-84.000.
Bornstein, Norman D., 4,352,844, Cl. 428-35.000.
Morgan, Charles R., 4,352,723, Cl. 204-159.190.
Mueller, Walter B., 4,352,849, Cl. 428-213.000.
W. Schlafhorst & Co.: *See*—
Baumges, Hans; and Preuhs, Hans-Jurgen, 4,352,466, Cl. 242-18.0PW.
Wagster, Robert P., to Black & Decker Inc. Small compact lightweight portable vise suitable for use by model makers and hobbyists. 4,352,489, Cl. 269-75.000.
Walbro Corporation: *See*—
Tuckey, Charles H., 4,352,641, Cl. 417-283.000.
Walker, David M.: *See*—
Pelczyk, Alan; Purssell, Robert F.; Woollard, Alfred J.; Fowler, Albert L.; Walker, David M.; Henderson, Alan G.; and Stevenson, Alastair K., 4,353,050, Cl. 336-30.000.
Walker, Peter S.: *See*—
Greene, David J.; and Walker, Peter S., 4,352,212, Cl. 3-1.910.
Wall, Donald E.: *See*—
Butler, John; Valle, L. George; and Wall, Donald E., 4,352,386, Cl. 160-178.00C.
Wallo, William H., to Francis & Lusky Company, Inc. Hand fan assembly and kit. 4,352,630, Cl. 416-70.00A.
Walls, Lester L., Jr.: *See*—
Weisner, Kent A.; and Walls, Lester L., Jr., 4,352,776, Cl. 264-522.000.
Walser, Mackenzie, to Johns Hopkins University, The. Treatment of hepatic and renal disorders with mixed salts of essential or semi-essential amino acids and nitrogen-free analogs. 4,352,814, Cl. 424-273.00R.
Walter, Lothar: *See*—
Olschewski, Armin; Brandenstein, Manfred; and Walter, Lothar, 4,352,419, Cl. 192-98.000.
Walters, William R. Low-high flow rate valve. 4,352,371, Cl. 137-414.000.
Walworth, Vivian K.: *See*—
Land, Edwin H.; and Walworth, Vivian K., 4,352,874, Cl. 430-568.000.
Walz, Alfred: *See*—
Rost, Helmut; and Walz, Alfred, 4,353,123, Cl. 367-137.000.
Wang, Wei-Ko: *See*—
Hoh, Ying-Chu; Lee, Bao-Dein; Ma, Tieh; Chuang, Wen-Shou; and Wang, Wei-Ko, 4,352,786, Cl. 423-98.000.
Warehime, Norwood R. Group use toy structural construction set. 4,352,255, Cl. 46-16.000.
Warehime, Norwood R. Football (soccer) game with mobile goals. 4,352,497, Cl. 273-411.000.
Wargo, Louis. Skirt construction for mobile home. 4,352,261, Cl. 52-169.120.
Warnecke, Gunter; and Schiller, Gerhard, to Krone GmbH. Device for visual display of telephone operation symbols. 4,352,959, Cl. 179-90.00K.
Warner-Lambert Company: *See*—
Cook, P. Dan, 4,352,795, Cl. 424-180.000.
Warner, Laurence A., to General Motors Corporation. Viscous damping of steering shaft. 4,352,304, Cl. 74-498.000.
Warrink, Geert: *See*—
Lorteije, Jean H. J.; Warrink, Geert; and Schneider, Henri W., 4,353,062, Cl. 340-767.000.
Watanabe, Hiroyuki, to Tomy Kogyo Co., Inc. Portable obstacle toy. 4,352,493, Cl. 273-1.0GA.
Watanabe, Kazuo; and Makabe, Hachiro, to Janome Sewing Machine Co. Ltd. Control circuit for a pulse motor. 4,353,021, Cl. 318-696.000.
Watanabe, Masaru; Amada, Takayoshi; and Yamaguchi, Shinichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Spray nozzle. 4,352,462, Cl. 239-266.000.
Watanabe, Naomitsu: *See*—
Miura, Kiyoshi; Watanabe, Naomitsu; and Tomita, Yoshifumi, 4,352,878, Cl. 430-167.000.
Watanabe, Seizo: *See*—
Satoh, Ken; Watanabe, Seizo; Saitou, Sinichi; Kato, Toshikazu; Ohshima, Ken; Shibata, Tsutomu; and Kimura, Kenji, 4,352,473, Cl. 242-199.000.
Watanabe, Yasuo; Isoyama, Seizi; and Yamamichi, Yoshikazu, to Dowa Mining Co., Ltd. Apparatus for production of spherical grain ferrite powder. 4,352,717, Cl. 159-4.00E.
Watts, Robert R. Linkage adjustment arrangement for a bathtub drain assembly. 4,352,213, Cl. 4-199.000.
Weber, Heinrich; Lorenz, Kurt; Dungs, Horst; and Urbye, Klaus, to Carl Still GmbH & Co., KG, Firma. Process and apparatus for the

production of molded metallurgical coke from coal briquettes. 4,352,720, Cl. 202-124.000.

Weber, Vincent H., to General Electric Company. Flash lamp array having combined shield and connector. 4,353,109, Cl. 362-13.000.

Weeks, Walter: *See—*
Weinzettel, Michael; and Weeks, Walter, 4,353,124, Cl. 368-258.000.

Wegerdt, Fritz; and Woelk, Kurt. Positive control for hydrostatic motors, especially radial piston motors. 4,352,319, Cl. 91-483.000.

Weick, Heinz H. Device for long-term evaporation of perfumes. 4,352,457, Cl. 239-45.000.

Weidler, Erhard A., to RUD-Kettenfabrik Rieger & Dietz GmbH u. Co. Tire protection chain. 4,352,382, Cl. 152-189.000.

Weijland, Willem P.: *See—*
van Tongeren, Hendricus F. J. J.; Schampers, Paulus P. M.; Weijland, Willem P.; and Carasso, Marino G., 4,353,005, Cl. 313-371.000.

Weinstein, Dieter G.: *See—*
Kuhner, Ernst E.; and Weinstein, Dieter G., 4,352,621, Cl. 414-231.000.

Weinstock, Joseph, to SmithKline Corporation. 3-Thienylmethyl-6-halo-7,8-dihydroxy-1-phenyl-2,3,4,5-tetrahydro-1H-3-benzazepines. 4,352,754, Cl. 260-330.300.

Weinzettel, Michael; and Weeks, Walter, to Eisenstadt Company. Ornamental mounting for watch. 4,353,124, Cl. 368-258.000.

Weisenbach, Charles O., to General Signal Corporation. Jet cooling pump. 4,352,637, Cl. 417-54.000.

Weishew, Joseph F. Air brake. 4,352,413, Cl. 188-72.400.

Weisner, Kent A.; and Walls, Lester L., Jr., to Kenergy Corporation. Apparatus and method for fabricating polycarbonate skylights. 4,352,776, Cl. 264-522.000.

Welch, Calvin D.: *See—*
Kluger, Edward W.; and Welch, Calvin D., 4,352,919, Cl. 528-111.000.
Kluger, Edward W.; and Welch, Calvin D., 4,352,921, Cl. 528-111.000.

Welch, Willard M.; and Harbert, Charles A., to Pfizer Inc. Hexahydrotrans-pyridoindole neuroleptic agents. 4,352,807, Cl. 424-256.000.

Wells, Alfred A. Reaction development apparatus. 4,352,494, Cl. 273-1.50A.

Wendler, Paul O.; and Dzioba, Donald L., to General Motors Corporation. Chatter free gear driven cam actuated vacuum pump. 4,352,296, Cl. 74-55.000.

Wengler, Leonard M.; Wicker, Harold J.; and Masica, Michael J., Jr., to Grumman Aerospace Corporation. Composite repair apparatus. 4,352,707, Cl. 156-359.000.

Wenzly, Kalman: *See—*
Steiner, Janos; Wenzly, Kalman; Toth, Jozsef T.; Tiggesbaumker, Peter; Goldmann, Wolf; and Butschko, Gerhard, 4,352,660, Cl. 432-14.000.

Wernau, William C., to Pfizer Inc. Xanthomonas biopolymer for use in displacement of oil from partially depleted reservoirs. 4,352,741, Cl. 252-8.55D.

Werner Kammann Maschinenfabrik GmbH: *See—*
Kammann, Wilfried, 4,352,326, Cl. 101-123.000.

Wessling, Ritchie A.: *See—*
Bradley, Norbert L.; Cleereman, Kenneth J.; and Wessling, Ritchie A., 4,352,766, Cl. 264-45.500.

West Electric Co., Ltd.: *See—*
Iwata, Hiroshi; Yamaoka, Tetsuo; and Morioka, Akitoshi, 4,352,546, Cl. 354-126.000.

Western Electric Company, Inc.: *See—*
Chapman, Ivan B., Jr., 4,352,479, Cl. 248-405.000.
Holbrook, Walter R.; and Sponsler, William A., 4,352,835, Cl. 427-38.000.
Lin, Wen, 4,352,784, Cl. 422-249.000.
Schellin, Winfrid O. E., 4,352,785, Cl. 422-249.000.

Westin, Karl G.: *See—*
Thalstrom, Peeter; and Westin, Karl G., 4,352,309, Cl. 83-697.000.

Westinghouse Electric Corp.: *See—*
Gyugyi, Laszlo, 4,353,024, Cl. 323-211.000.
Knecht, Gene C., 4,352,979, Cl. 235-91.00A.
Mims, James H., 4,353,067, Cl. 343-17.2PC.
Silvestri, George J., Jr., 4,352,270, Cl. 60-648.000.

Westley, John: *See—*
Liu, Chao-Min; Tresner, Homer D.; and Westley, John, 4,352,934, Cl. 548-217.000.

Westvaco Corporation: *See—*
Georgiades, Gregory, 4,352,670, Cl. 493-337.000.

Wheeler, Lionel H.: *See—*
LaRue, Forrest N.; and Wheeler, Lionel H., 4,352,285, Cl. 72-466.000.

White Consolidated Industries, Inc.: *See—*
Fritchman, Jack F., 4,352,377, Cl. 137-851.000.

White, Lionel S., Jr., to Texas Instruments Incorporated. IGFET Clock generator circuit employing MOS boatstrap capacitive drive. 4,352,996, Cl. 307-269.000.

Whitefield, John T.; and Woron, Robert P., to Allen Organ Company. Transient harmonic interpolator for an electronic musical instrument. 4,352,312, Cl. 84-1.210.

Whitehead Motofides S.p.A.: *See—*
Nardi, Giovanni, 4,352,297, Cl. 74-63.000.

Whiteside, Ross C., Jr.; Gist, Adolphus V.; and Doorakian, George A., to Dow Chemical Company, The. Process for preparing epoxy resins having improved physical properties when cured using quaternary phosphonium catalysts. 4,352,918, Cl. 528-89.000.

Whitlow, George A. Ground fault interrupter circuit. 4,353,103, Cl. 361-45.000.

Whittlesey, Thomas E.: *See—*
Winders, Gordon R.; MacKay, Fredric M.; and Whittlesey, Thomas E., 4,352,232, Cl. 29-243.560.

Wick, Gerald H.: *See—*
Lloyd, Ronald B.; and Wick, Gerald H., 4,352,266, Cl. 56-11.300.

Wicker, Harold J.: *See—*
Wengler, Leonard M.; Wicker, Harold J.; and Masica, Michael J., Jr., 4,352,707, Cl. 156-359.000.

Widmann, Dietrich, to Siemens Aktiengesellschaft. Method for manufacture of integrated semiconductor circuits, in particular CCD-circuits, with self-adjusting, nonoverlapping polysilicon electrodes. 4,352,237, Cl. 29-577.00C.

Widrig, Jakob: *See—*
Hardt, Jean; and Widrig, Jakob, 4,352,408, Cl. 181-249.000.

Wieder, Irwin; and Wollenberg, Robert H., to Analytical Radiation Corporation. Species-linked diamine triacetic acids and their chelates. 4,352,751, Cl. 260-112.00R.

Wiegmann, William: *See—*
Allyn, Christopher L.; Gossard, Arthur C.; and Wiegmann, William, 4,353,081, Cl. 357-16.000.

Wieschel, John E., to Harnischfeger Corporation. Warehouse crane with pin-engageable tote pans. 4,352,622, Cl. 414-277.000.

Wilbur, Leonard P.: *See—*
Kimbrough, Laurence B.; and Wilbur, Leonard P., 4,352,226, Cl. 29-25.190.

Wilcockson, Alan: *See—*
Hartley, Nicholas E. W.; Wilcockson, Alan; Sutherland, David M., deceased; and Midland Bank Trust Company Limited, legal representative, The, 4,352,698, Cl. 148-4.000.

Wilhelm, Gary, to Llama Gabilonda y. Cia. S.A. Hammer safety block. 4,352,317, Cl. 89-154.000.

Wilkerson Corporation: *See—*
Ribble, Franklin; and Huber, William E., 4,352,511, Cl. 285-91.000.

Wille, Roger; and Meindl, Gerhard, to Siemens Aktiengesellschaft. Coil form for electric coils. 4,353,051, Cl. 336-192.000.

Williams, Arthur J., to Commercial Shearing, Inc. Control valves. 4,352,375, Cl. 137-596.130.

Williams, Arthur R.; and Williams, Gareth T., to Dunlop Limited. Method of making porous tread. 4,352,704, Cl. 156-125.000.

Williams, Gareth T.: *See—*
Williams, Arthur R.; and Williams, Gareth T., 4,352,704, Cl. 156-125.000.

Willis, Donald H., to RCA Corporation. Television receiver ferroresonant load power supply with reduced saturable reactor circulating current. 4,353,014, Cl. 315-411.000.

Wilson, Gerald H. Pulpit. 4,352,338, Cl. 114-364.000.

Wilson, Joe C.: *See—*
Davis, Pauls; and Wilson, Joe C., 4,352,742, Cl. 252-75.000.

Wilson, Ralph A. Collapsible bicycle storage assembly. 4,352,363, Cl. 135-7.000.

Wilson, Richard M.: *See—*
Patterson, Charlton A.; and Wilson, Richard M., 4,352,714, Cl. 156-626.000.

Winders, Gordon R.; MacKay, Fredric M.; and Whittlesey, Thomas E., to Tipper Tie, Inc. Clip loading and feed device. 4,352,232, Cl. 29-243.560.

Windmoller & Holscher: *See—*
Feldkamper, Richard; and Achelpohl, Fritz, 4,352,468, Cl. 242-58.400.

Winkelmann, Johannes: *See—*
Renson, Marcel; Etschenberg, Eugen; and Winkelmann, Johannes, 4,352,799, Cl. 424-244.000.

Winslow, John S.; and Dakin, Wayne R., to Discovision Associates. Apparatus for correcting the time base of information recovered from a movable information storage medium. 4,353,089, Cl. 358-337.000.

Wintraecken, Johannes J. M. H.: *See—*
Kooymans, Petrus G.; Wintraecken, Johannes J. M. H.; Raudenbusch, Werner T.; Seelen-Kruijssen, Josepha M. E.; and Schreurs, Gerardus C. M., 4,352,842, Cl. 427-385.500.

Wirz, Armin: *See—*
Graf Felix; Wirz, Armin; and Mondini, Giancarlo, 4,352,223, Cl. 19-65.0CR.

Wirz, Karl: *See—*
Heimgartner, Hans; and Wirz, Karl, 4,353,118, Cl. 364-510.000.

Wisconsin Alumni Research Foundation: *See—*
Zeikus, Joseph G.; and Lamed, Raphael J., 4,352,885, Cl. 435-189.000.

Witt, Enrique R.: *See—*
Blay, George A.; and Witt, Enrique R., 4,352,738, Cl. 210-612.000.

Wittfoht, Hans, to Polensky & Zollner. Method for the construction of a cable-stayed or rein-girth bridge. 4,352,220, Cl. 14-1.000.

Wittkugel, Heinz: *See—*
Maier, Maxemin; Wittkugel, Heinz; Liepelt, Klaus J.; and Homeier, Jorn, 4,352,430, Cl. 209-577.000.

Wittman, Brian A.: *See—*
Davis, Paul C.; Jackson, Raymond G.; Nahas, Joseph J.; Nelson, Dale H.; Ong, DeWitt G.; and Wittman, Brian A., 4,352,958, Cl. 179-84.0VF.

Witzel, Frank: *See—*
Puglia, Wayne J.; Kehoe, Gary; Witzel, Frank; Clark, K. Warren; and Mackay, Donald A. M., 4,352,824, Cl. 426-5.000.

Woebcke, Herman N.: *See—*
Gartside, Robert J.; and Woebcke, Herman N., 4,352,728, Cl. 208-127.000.

Woelk, Kurt: *See—*
Wegerdt, Fritz; and Woelk, Kurt, 4,352,319, Cl. 91-483.000.
Woerndle, Rudolf: *See—*
Buchs, Wolfgang; Nowak, Franz; and Woerndle, Rudolf, 4,352,631, Cl. 416-134.00A.
Wofor AG: *See—*
Hecht, Sidney M., 4,352,797, Cl. 424-195.000.
Woldring, Leonard: *See—*
Moerkens, Jozef C.; and Woldring, Leonard, 4,353,007, Cl. 315-62.000.
Wolf, Stephen H.: *See—*
Cherukuri, Subraman R.; Roy, Raymond L.; Friello, Dominick R.; and Wolf, Stephen H., 4,352,823, Cl. 426-5.000.
Cherukuri, Subraman R.; Roy, Raymond L.; Friello, Dominick R.; and Wolf, Stephen H., 4,352,825, Cl. 426-5.000.
Wollenberg, Robert H.: *See—*
Wieder, Irwin; and Wollenberg, Robert H., 4,352,751, Cl. 260-112.00R.
Wood, Robert W.; Parnell, John V.; and Hoefler, Andrew C., to General Foods Corporation. Stabilized dressing products. 4,352,832, Cl. 426-589.000.
Woods, Thomas W., to T. W. Woods Constructions Pty. Limited. Vertical press. 4,352,284, Cl. 72-452.000.
Woollard, Alfred J.: *See—*
Pelczyk, Alan; Purssell, Robert F.; Woollard, Alfred J.; Fowler, Albert L.; Walker, David M.; Henderson, Alan G.; and Stevenson, Alastair K., 4,353,050, Cl. 336-30.000.
Wooten, Willis C.; Jackson, Winston J., Jr.; and Kuhfuss, Herbert F., to Eastman Kodak Company. Thermosetting powder coating compositions. 4,352,924, Cl. 528-302.000.
Woron, Robert P.: *See—*
Whitefield, John T.; and Woron, Robert P., 4,352,312, Cl. 84-1.210.
Wright, John J.: *See—*
Rane, Dinanath F.; Wright, John J.; and Pike, Russell E., 4,352,808, Cl. 424-258.000.
Wulf, Karl A., to Alco Standard Corporation. Inductively heated rotary retort heat treating furnace. 4,352,969, Cl. 219-10.750.
Wyoral, Frank J. Mast and boom carrier combination for sailing vessels. 4,352,337, Cl. 114-343.000.
X. S. Smith, Inc.: *See—*
Smith, Richard W.; and Frank, Robert H., 4,352,259, Cl. 52-2.000.
Xerox Corporation: *See—*
Cross, David A., 4,353,080, Cl. 346-153.100.
Stange, Klaus K., 4,352,552, Cl. 355-4.000.
Yagishita, Teruo: *See—*
Narusawa, Toshiaki; Okada, Seiji; Muramatsu, Kiyohide; Yagishita, Teruo; and Okuyama, Hirohumi, 4,352,877, Cl. 430-97.000.
Yamachika, Hiroshi: *See—*
Takisawa, Yukihisa; Saito, Kenji; and Yamachika, Hiroshi, 4,352,756, Cl. 549-497.000.
Yamada, Nobuo; and Morino, Toshiharu, to Aisan Industry Co., Ltd. Vent changeover device for a carburetor. 4,352,763, Cl. 261-72.00R.
Yamada, Yuki: *See—*
Owatari, Akio; and Yamada, Yuki, 4,352,691, Cl. 106-20.000.
Yamaguchi, Shinichi: *See—*
Watanabe, Masaru; Amada, Takayoshi; and Yamaguchi, Shinichi, 4,352,462, Cl. 239-266.000.
Yamaguchi, Shinjiro, to Sankyo Oilless Industry, Inc. Process for producing a hollow cast product. 4,352,387, Cl. 164-132.000.
Yamahira, Yoshiya; Noguchi, Takeshi; Fujioka, Keiji; Noguchi, Tetsuo; and Sato, Shigeji, to Sumitomo Chemical Company, Limited. Pharmaceutical composition comprising bencyclane fumarate and cyclodextrin. 4,352,793, Cl. 424-180.000.
Yamamichi, Yoshikazu: *See—*
Watanabe, Yasuo; Isoyama, Seizi; and Yamamichi, Yoshikazu, 4,352,717, Cl. 159-4.00E.
Yamamoto, Masataka; Uehara, Tsutomu; and Yoshimori, Minoru, to Kureha Kagaku Kogyo Kabushiki Kaisha. Five-layered packaging film. 4,352,850, Cl. 428-214.000.
Yamamoto, Susumu: *See—*
Saitoh, Takeshi; Nagashima, Toshio; Hatashita, Hiroshi; and Yamamoto, Susumu, 4,353,132, Cl. 455-315.000.
Yamamoto, Yoshiichi: *See—*
Kono, Hisashi; Terai, Kenji; Hisadomi, Masaki; Uemura, Katumi; Ohta, Sumio; and Yamamoto, Yoshiichi, 4,352,923, Cl. 528-233.000.
Yamaoka, Tetsuo: *See—*
Iwata, Hiroshi; Yamaoka, Tetsuo; and Morioka, Akitoshi, 4,352,546, Cl. 354-126.000.
Yamauchi, Hiroshi: *See—*
Nomoto, Seiichiro; Ikuta, Hironori; Machida, Yoshimasa; Negi, Shigeto; Sugiyama, Isao; Yamauchi, Hiroshi; Nakatsuka, Kenro; and Saito, Isao, 4,352,801, Cl. 424-246.000.
Yamazawa, Masayuki, to Aisin Seiki Kabushiki Kaisha. Sewing machine having thread cutting device. 4,352,333, Cl. 112-291.000.
Yanai, Taro. Lighting device. 4,352,657, Cl. 431-127.000.
Yankovoy, Alexander; and Ozer, Theodore, to Boeing Company, The. Method and tool for generating holes in composite materials. 4,352,610, Cl. 408-1.00R.
Yano, Ryuji: *See—*
Yoshida, Kazutoshi; Yano, Ryuji; and Ishida, Kazuhiro, 4,352,995, Cl. 307-265.000.
Yasuhara, Takashi: *See—*
Kobayashi, Hideaki; Tamuro, Yasuharu; Yasuhara, Takashi; and Ishii, Kunio, 4,353,002, Cl. 310-64.000.
Yazolino, Lauren F.: *See—*
Anderson, Jared A.; Van Gelder, Robert V.; Yazolino, Lauren F.; and Braun, Jimmy E., 4,352,274, Cl. 62-229.000.
Yi, Hyon P. Writing implement. 4,352,579, Cl. 401-19.000.
Yoda, Kuniichi; Ohkawa, Takehisa; and Azegami, Hitoshi, to TDK Electronics Co., Ltd. Magnetic recording medium. 4,352,859, Cl. 428-425.900.
Yoho, Robert W. Control circuit for air conditioning systems. 4,352,349, Cl. 126-299.00R.
Yokozeki, Shinichi: *See—*
Tsukagoshi, Tsunehiro; Yokozeki, Shinichi; Yoshino, Toshikazu; and Arai, Yasuyuki, 4,352,407, Cl. 181-167.000.
Yoneyama, Goro: *See—*
Kumasaka, Sadao; Tada, Satomi; Yoneyama, Goro; and Hashimoto, Kazuo, 4,352,651, Cl. 425-261.000.
Yoshida, Kazutoshi; Yano, Ryuji; and Ishida, Kazuhiro, to Hitachi, Ltd. Pulse generating circuit with clock pulse ceasing feature. 4,352,995, Cl. 307-265.000.
Yoshihara, Motoshi: *See—*
Ogata, Masami; Yoshihara, Motoshi; and Tada, Masahira, 4,352,227, Cl. 29-33.00F.
Yoshimori, Minoru: *See—*
Yamamoto, Masataka; Uehara, Tsutomu; and Yoshimori, Minoru, 4,352,850, Cl. 428-214.000.
Yoshino Kogyosho Co., Ltd.: *See—*
Ichizawa, Yoshiyuki; and Nomoto, Tsugio, 4,352,424, Cl. 198-482.000.
Yoshino, Yataro; Ota, Akiho; and Sugiura, Hiroaki, 4,352,435, Cl. 215-1.00C.
Yoshino, Toshikazu: *See—*
Tsukagoshi, Tsunehiro; Yokozeki, Shinichi; Yoshino, Toshikazu; and Arai, Yasuyuki, 4,352,407, Cl. 181-167.000.
Yoshino, Yataro; Ota, Akiho; and Sugiura, Hiroaki, to Yoshino Kogyosho Co., Ltd. Synthetic resin made thin-walled bottle. 4,352,435, Cl. 215-1.00C.
Young, David H., to MTI Systems Corporation. Substrate separating machine and method. 4,352,446, Cl. 225-1.000.
Young, Prussin, MGK, J.V.: *See—*
Young, Robert W.; Prussin, Samuel; and Gaylord, Norman G., 4,352,833, Cl. 427-4.000.
Young, Richard A., to Ceco Corporation, The. Torque reversing motor control structure and method. 4,353,022, Cl. 318-753.000.
Young, Robert W.; Prussin, Samuel; and Gaylord, Norman G., to Young, Prussin, MGK, J.V. Adherent controlled release pesticides. 4,352,833, Cl. 427-4.000.
Yueh, Chang L., to General Motors Corporation. Touch actuated electronically tuned receiver. 4,353,131, Cl. 455-179.000.
Yuto, Masao: *See—*
Shimba, Hiroshi; Suzuki, Fumio; and Yuto, Masao, 4,352,701, Cl. 156-51.000.
Zaffaroni, Alejandro; and Fara, John, to ALZA Corporation. Potassium replacement therapy. 4,352,791, Cl. 424-153.000.
Zehren, James N., to TRW Inc. Cable-suspended well pumping systems. 4,352,394, Cl. 166-106.000.
Zeigler, Edward H., Jr., to Hercules Incorporated. Co-nitrating trimetholethane and diethylene glycol. 4,352,699, Cl. 149-109.600.
Zeikus, Joseph G.; and Lamed, Raphael J., to Wisconsin Alumni Research Foundation. Preparation of a novel NADP linked alcohol-aldehyde/ketone oxidoreductase from thermophilic anaerobic bacteria for analytical and commercial use. 4,352,885, Cl. 435-189.000.
Zenith Radio Corporation: *See—*
Dam, Robert, 4,353,094, Cl. 358-249.000.
Zenith Stairways & Bldg. Products, Inc.: *See—*
Basey, Gene, 4,352,485, Cl. 256-65.000.
Zondler, Helmut; and Moser, Roland, to Ciba-Geigy Corporation. Dimethylamino derivatives and their use. 4,352,913, Cl. 525-504.000.
Zuhlke, Rainer: *See—*
Krumm, Horst; Schettler, Helmut; Stahl, Rainer; and Zuhlke, Rainer, 4,353,040, Cl. 333-1.000.
Zust, John E. Thread tensioning and brake device. 4,352,471, Cl. 242-147.00R.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 5TH DAY OF OCTOBER, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Brian, William S. Fuel-operated device. Re. 31,049, Cl. 417-343.000.

Campos, Jose G.: *See*—
Lombana, Luis A.; and Campos, Jose G., Re. 31,046, Cl. 110-187.000.

Davis, William F.; Shumway, Howard G.; and Frederiksen, Thomas M., to Motorola Inc. Regulator for controlling capacitor charge to provide complex waveform. Re. 31,051, Cl. 307-260.000.

Essell, Albert E., deceased; by Essell, Virginia G., executrix; Essell, Robert A. T.; and Essell, Christopher W. Snowplow blade extension. Re. 31,045, Cl. 37-281.000.

Essell, Christopher W.: *See*—
Essell, Albert E., deceased; Essell, Virginia G., executrix; Essell, Robert A. T.; and Essell, Christopher W., Re. 31,045, Cl. 37-281.000.

Essell, Robert A. T.: *See*—
Essell, Albert E., deceased; Essell, Virginia G., executrix; Essell, Robert A. T.; and Essell, Christopher W., Re. 31,045, Cl. 37-281.000.

Essell, Virginia G., executrix: *See*—
Essell, Albert E., deceased; Essell, Virginia G., executrix; Essell, Robert A. T.; and Essell, Christopher W., Re. 31,045, Cl. 37-281.000.

Frederiksen, Thomas M.: *See*—
Davis, William F.; Shumway, Howard G.; and Frederiksen, Thomas M., Re. 31,051, Cl. 307-260.000.

Goodyear Tire & Rubber Company, The: *See*—
Ross, John A., Re. 31,047, Cl. 138-130.000.

Harig, Manfred, to N.V. Western Gear Europe, S.D. Hoisting device. Re. 31,050, Cl. 474-10.000.

Lombana, Luis A.; and Campos, Jose G., to Lurgi Corporation. Incineration method and system. Re. 31,046, Cl. 110-187.000.

Lurgi Corporation: *See*—
Lombana, Luis A.; and Campos, Jose G., Re. 31,046, Cl. 110-187.000.

Morbark Industries, Inc.: *See*—
Smith, Leward N., Re. 31,048, Cl. 241-281.000.

Motorola Inc.: *See*—
Davis, William F.; Shumway, Howard G.; and Frederiksen, Thomas M., Re. 31,051, Cl. 307-260.000.

N.V. Western Gear Europe, S.D.: *See*—
Harig, Manfred, Re. 31,050, Cl. 474-10.000.

Ross, John A., to Goodyear Tire & Rubber Company, The. Hose structure. Re. 31,047, Cl. 138-130.000.

Shumway, Howard G.: *See*—
Davis, William F.; Shumway, Howard G.; and Frederiksen, Thomas M., Re. 31,051, Cl. 307-260.000.

Smith, Leward N., to Morbark Industries, Inc. Tree destroyer. Re. 31,048, Cl. 241-281.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Olivier, James Peter; and Hickin, George K., to Freeport Minerals Company. Apparatus and process for determining particle size by X-ray absorption analysis. B1 3,449,567. Cl. 250–362.

Freeport Minerals Company: *See*—
Olivier, James Peter; and Hickin, George K. B1 3,449,567. Cl. 250–362.

LIST OF DESIGN PATENTEES

Ader, Gary B.: *See*—
McMickle, Robert L.; Ader, Gary B.; and Grice, Steven L., 266,427, Cl. D15-12.000.

Agfa-Gevaert AG: *See*—
Schlagheck, Norbert, 266,430, Cl. D16-14.000.

Alissandratos, Tacko D. Combined toilet bowl brush and housing therefor. 266,379, 10-5-82, Cl. D6-86.000.

Ament, Donald S.; and Ament, Duane S., to Miracle Recreation Equipment Company. Playground seating unit. 266,447, 10-5-82, Cl. D21-242.000.

Ament, Duane S.: *See*—
Ament, Donald S.; and Ament, Duane S., 266,447, Cl. D21-242.000.

Angarone, Anthony D. Combined tumbler and supporting necklace therefor. 266,387, 10-5-82, Cl. D7-6.000.

Appel, Mel; and Kress, George, to Appel, Mel. Toy seaplane. 266,441, 10-5-82, Cl. D21-90.000.

Appel, Mel; Means, Paul B., III; Wilcox, James J.; and Reina, David W., to Appel, Mel. Toy typewriter. 266,442, 10-5-82, Cl. D21-109.000.

Apple Computer, Inc.: *See*—
Dresselhaus, William F., 266,426, Cl. D14-115.000.

Avento Designs, Inc.: *See*—
DiPersia, James L., 266,386, Cl. D6-194.000.

Ball Corporation: *See*—
Haag, John H., Sr., 266,398, Cl. D9-370.000.

Baptista, Roberto J., to Roanto Investment N.V. Golf club carrier. 266,373, 10-5-82, Cl. D3-37.000.

Bell & Howell Company: *See*—
Overman, John W., 266,429, Cl. D16-11.000.

Berkley and Company, Inc.: *See*—
McMickle, Robert L.; Ader, Gary B.; and Grice, Steven L., 266,427, Cl. D15-12.000.

Berry, Richard L., Jr. Fountain head. 266,451, 10-5-82, Cl. D23-13.000.

Blake, Joseph W., III: *See*—
Swett, James B.; Blake, Joseph W., III; and Conti, Rino, 266,450, Cl. D23-11.000.

Boden, Ogden W. Cap. 266,370, 10-5-82, Cl. D2-244.000.

Boldt, Melvin H.; Chuboff, David P.; Trottier, Clement W.; and Slater, Robert E., to Zenith Radio Corporation. Projection television receiver. 266,423, 10-5-82, Cl. D14-83.000.

Brent, Richard W., to Emerson Electric Co. Sheathed electric heating element. 266,414, 10-5-82, Cl. D13-21.000.

Bridgestone Tire Company Limited: *See*—
Nishio, Hideaki; and Takaki, Kazunari, 266,411, Cl. D12-147.000.

Burlington Furniture Division of Burlington Industries, Inc.: *See*—
West, Haywood L., 266,383, Cl. D6-172.000.

Burroughs Corporation: *See*—
Reaume, Richard W., 266,425, Cl. D14-114.000.

Campion, Stanley F., executor: *See*—
Jensen, George B., deceased; and Campion, Stanley F., executor, 266,389, Cl. D7-40.000.

Cassett, Channing, to Valdor International Cosmetics Ltd. Toothbrush and toothpaste tube cap set. 266,375, 10-5-82, Cl. D4-18.000.

Chuboff, David P.: *See*—
Boldt, Melvin H.; Chuboff, David P.; Trottier, Clement W.; and Slater, Robert E., 266,423, Cl. D14-83.000.

Cinque, Alphonse P. Lens mask. 266,432, 10-5-82, Cl. D16-38.000.

Cinque, Alphonse P. Lens mask. 266,433, 10-5-82, Cl. D16-38.000.

Claman, Mike T., to Lewittes Furniture Enterprises, Inc. Chair. 266,377, 10-5-82, Cl. D6-57.000.

Clarion Co. Ltd.: *See*—
Kikuhara, Toshiyoshi, 266,418, Cl. D14-7.000.

Clowe, Robert A.; Robertson, Donald A.; and Wright, Gregory P., to Xerox Corporation. Copying machine. 266,431, 10-5-82, Cl. D16-30.000.

Coniglio, Raymond C., to Twinpak Ltd. Bottle. 266,397, 10-5-82, Cl. D9-325.000.

Conrad, George R., to Fantasy Flavors, Inc. Bottle or similar article. 266,402, 10-5-82, Cl. D9-404.000.

Conti, Rino: *See*—
Swett, James B.; Blake, Joseph W., III; and Conti, Rino, 266,450, Cl. D23-11.000.

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439 4,352,429

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CLASS 209

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600 4,352,431

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612 4,352,738
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72 4,352,970
86.61 4,352,971
100 4,352,972
121 LH 4,352,973
121 PD 4,352,974
125.11 4,352,975
217 4,352,976
243 4,352,977

CLASS 220

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CLASS 221

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CLASS 222

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146 HE 4,352,442
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145 4,352,572
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CLASS 369

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CLASS 370

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CLASS 374

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CLASS 375

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3 R 4,352,549
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71 4,352,559
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354 4,352,564
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364 4,352,566

CLASS 357

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30 4,353,084
42 4,353,085
51 4,353,086

CLASS 358

101 4,353,087
120 4,353,088
139 4,353,091
160 4,353,092
4,353,093
249 4,353,094
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263 4,353,096
287 4,353,097
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CLASS 360

9.1 4,353,098
27 4,353,099
65 4,353,100
85 4,353,101
126 4,353,102

CLASS 361

45 4,353,103
91 4,353,104
101 4,353,105
293 4,353,106
323 4,353,107
386 4,353,108

CLASS 362

13 4,353,109
35 4,353,110
80 4,353,111

CLASS 363

16 4,353,112
21 4,353,113
4,353,114
42 4,353,115
133 4,353,116

CLASS 364

300 4,353,117
510 4,353,118
517 4,353,119

CLASS 366

76 4,352,567
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127 4,352,570
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145 4,352,572
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194 4,352,574

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136 4,353,125

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78 4,352,781
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	4,352,403		4,353,078		4,352,454		4,353,093		4,352,494		4,352,259
	4,352,447		4,353,089		4,352,697		4,353,131		4,352,518		4,352,310
	4,352,474		4,353,090		4,352,962	19 :	4,352,282		4,352,522		4,352,385
	4,352,481		4,353,099	15 :	4,352,324		4,352,367		4,352,586		4,352,416
	4,352,484		4,353,105	16 :	4,352,290		4,352,434		4,352,597		4,352,517
	4,352,485		4,353,115		4,352,332		4,352,626		4,352,609		4,352,564
	4,352,492		4,353,117		4,352,502	21 :	4,352,578		4,352,638		4,352,613
	4,352,519		4,353,120		4,352,733	22 :	4,352,537		4,352,641		4,352,699
	4,352,530	08 :	4,352,334	17 :	4,352,262		4,352,930		4,352,648		4,352,743
	4,352,554		4,352,395		4,352,266		4,352,990		4,352,732		4,352,757
	4,352,560		4,352,511		4,352,276	23 :	4,352,656		4,352,742		4,352,758
	4,352,563		4,352,957		4,352,318	24 :	4,352,255		4,352,760		4,352,759
	4,352,565		4,352,968		4,352,322		4,352,292		4,352,766		4,352,762
	4,352,566		4,353,003		4,352,355		4,352,479		4,352,767		4,352,784
	4,352,567	09 :	4,352,317		4,352,372		4,352,489		4,352,781		4,352,808
	4,352,570		4,352,410		4,352,381		4,352,497		4,352,795		4,352,809
	4,352,579		4,352,411		4,352,393		4,352,542		4,352,805		4,352,811
	4,352,607		4,352,412		4,352,398		4,352,591		4,352,917		4,352,832
	4,352,614		4,352,453		4,352,427		4,352,723		4,352,929		4,352,858
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	4,352,633		4,352,629		4,352,524		4,352,991	27 :	4,352,331		4,352,891
	4,352,636		4,352,711		4,352,529		4,353,067		4,352,359		4,352,900
	4,352,639		4,352,741		4,352,583		4,353,071		4,352,360		4,352,908
	4,352,662		4,352,806		4,352,589	25 :	4,352,212		4,352,429		4,352,909
	4,352,668		4,352,807		4,352,645		4,352,337		4,352,469		4,352,934
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